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An Experimental Investigation of Two 15%-Scale Wind Tunnel Fan-Blade Designs

David B. Signor

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SUMMARY

An experimental three-dimensional investigation of two fan-blade designs was conducted. The fan blades tested were 15%-scale models of blade designs to be used in the fan drive of the National Full-Scale Aerodynamic Complex at NASA Ames Research Center. NACA 65- and modified NACA 65-series airfoil sections comprised the two fan-blade designs. The blades with modified 65-series sections incorporated increased thickness on the upper surface, between the leading edge and the one-half-chord position. Twist and taper were the same for both blade designs. The fan blades with modified 65-series sections were found to have an increased stall margin when they were compared with the unmodified blades.

INTRODUCTION

The National Full-Scale Aerodynamic Complex (NFAC) at NASA Ames Research Center has recently undergone modifications which include an increased maximum airspeed in the 40- by 80-ft test section, the addition of a new 80- by 120-ft test section, and new control rooms for each test section. The redesign of the fan-drive system to achieve higher flow speeds was one of the significant modifications. The fan-drive system, shown in figure 1, consists of six 40-ft-diameter fans. Each fan has 15 blades with a chord of approximately 3 ft and a 12-ft span. The new fan blades operate at variable revolutions per minute (rpm) and pitch, with a blade angle range of -18° to 52° measured at the 75% radius location.

The limitations on the fan-drive design are available power and blade stall. The maximum rpm is restricted by a limitation on available power and the blade angle at a given rpm is limited by the possibility of blade stall. The maximum rpm on the full-scale fans is 180 (corresponding to 1200 rpm for 15% scale) at maximum available power and the blade angle limitation corresponds to a limit of the pressure rise across the fan. The upper limit on blade angle at a given rpm can be increased by proper blade design to deter the onset of blade stall.

The first proposed blade design incorporated a modified C-4 airfoil-blade thickness about a circular-arc mean line. The C-4 airfoil section is a British design, similar to the NACA-65-series section. Both high-speed (maximum 2000 rpm, 15% scale) and low-speed (maximum 1200 rpm, 15% scale) versions of this blade design were tested (refs. 1 and 2). Following this, a 65-series blade design was proposed and then tested at low speed (maximum 1200 rpm, 15% scale). This design met the performance requirements, but was more susceptible to stall than desirable. Thus, a modified 65-series blade design was proposed which incorporates an increased

thickness on the upper surface between the leading edge and the one-half chord to increase the stall margin. This modification was design by Hicks (ref. 3). In 1983, a comparative two-dimensional (2-D) test of the 65-series- and modified 65-series blade sections was conducted at Ohio State University during 1983, to determine the effect of the blade modification on the maximum lift coefficient. The two-dimensional test was conducted in a 15- by 56-cm Transonic Airfoil Tunnel (ref. 4). The tunnel has a Reynolds number range of 2^6 to 34^6 , depending on Mach number. The comparative 15%-scale-fan test described here was then conducted to measure the 3-D performance and stall characteristics of both the 65-series- and modified 65-series-section fan blades. This test is also described in reference 5. The purpose of this investigation is to quantify the improved stall characteristics of the recent fan-blade redesign for the NFAC drive system.

NOMENCLATURE

\hat{c}	corrected values
F_{ax}	fan axial force, N
\dot{m}	mass flow, kg/sec (mass F)
\dot{m}_c	corrected mass flow, kg/sec
N	newton
P_s	static pressure, N/m^2
P_t	total pressure, N/m^2
P_{t_1}	total pressure at station 1, N/m^2
P_{t_2}	total pressure at station 2, N/m^2
P_{t_c}	corrected total pressure at station 2, N/m^2
P_{t_3}	total pressure at station 3, N/m^2
r	radial position of total and directional pressure taps, cm
R	radius of the fan-drive outer duct (0.921 m)
r/R	normalized radial position
V	velocity, m/sec
V_1	velocity at station 1, m/sec

ΔP_s	static pressure change across the fan, N/m^2
ΔP_t	total pressure change across the fan, N/m^2
ΔP_{tc}	corrected total pressure change across the fan, N/m^2
η	fan efficiency
η_s	fan efficiency based on static pressure
η_t	fan efficiency based on total pressure
η_{tc}	corrected fan efficiency based on total pressure
ϕ	flow swirl angle, deg
ρ	density, kg/m^3

DESCRIPTION OF EXPERIMENT

Test Facility

The test facility (shown in fig. 2) consisted of a 1/15-scale model of the 80- by 120-Foot Wind-Tunnel inlet and test section mounted upstream of the 15%-scale single-fan drive assembly. The 1/15-scale 80- by 120-inlet model which had been used in flow-quality-improvement studies, provided uniform inflow to the 15%-scale fan drive. The inflow velocity distribution to the single small-scale fan drive and the six full-scale fans is not expected to be the same. As shown in figure 3, a 0.19-m (7.5-in.)-thick section of honeycomb (used as flow straightener) was located immediately downstream of the test section, and a 2.74-m (9-ft) rectangular-to-circular transition section was used to connect the test section with the fan drive. The 1.83-m (6-ft) diameter fan was powered by a 1118-kW (1500-hp) motor. A detailed view of the fan-drive section is shown in figure 4. A 4.88-m-long (16-ft) rectangular duct (aft section) separated the fan-drive diffuser from the exit throttle doors, shown in figures 5a and 5b, which were used to adjust the mass flow rate. Extreme reductions in the mass flow caused the flow over the fan blades to separate, which fits the classic definition of stall. Measurements of pressure change across the fan were used to infer the condition of stall.

Fan Blades

Two sets of 15%-scale fan blades were tested. Blade set I was composed of NACA 65-series airfoil sections. Blade set II was designed and fabricated using blade set I as a baseline (ref. 3). The design of blade set II incorporated increased thickness on the upper surface between the leading edge and the one-half-chord position. The difference in section profile for the modified (set II) and

unmodified (set I) blades at $r/R = 0.75$ ($r = 0.46$ m = 18 in.) is shown in figure 6. The section coordinates for blade sets I and II are shown in Appendices A and B, respectively. The coordinates for the NACA 65-series airfoil sections of blade set I are also shown in figures 7(a-h). The leading-edge modification extended from $r/R = 0.5$ to the blade tip. The blade twist and taper distributions are the same for both sets of blades (Table I).

Instrumentation

The measurements included (1) inlet temperature and pressures, (2) ambient humidity, (3) shaft torque and vibration, (4) motor rpm, and (5) total and static gage pressures (the reference pressure was atmospheric).

The rectangular-to-circular-transition section upstream of the fan was instrumented with three axial rows of static taps. One row of static taps was located on each sidewall and one row was located on the ceiling of the transition section (fig. 8). These measurements were made to check the quality of the flow as it enters the fan drive.

The primary instrumentation consisted of total- and static-pressure taps in the 15%-scale fan drive (fig. 9--see also fig. 4).

Station 1 is immediately upstream of the fan. Six total-pressure rakes with eight taps on each were used. The locations of the total pressure taps divided the annulus into equal areas. All of the rakes that were used in the fan drive were identical. A sketch of one total-pressure rake is shown in figures 10(a,b). Static pressure taps were located in the outer wall of the fan drive, near the base of each total-pressure rake.

Station 2 is between the fan and stators. Two total-pressure rakes positioned 180° apart (vertical locations) and two directional-pressure probes (horizontal locations), also 180° apart, were used. The directional pressure probes were traversed across the annulus and flow swirl measurements were made at the same radial locations as the total pressure rakes. The radial locations for the total-pressure and flow swirl measurements were: $r/R = 0.97, 0.92, 0.86, 0.80, 0.74, 0.66, 0.58$, and 0.48 . The nacelle had a radius of 0.397 m. The duct radius was 0.921 m.

Station 3 is downstream of the stators. Four total-pressure rakes located at a 90° angle to each other and four static taps located in the outer duct wall were used.

Test Procedures

The parameters which were varied during testing of each set of blades were blade angle, mass flow, and rpm. The conditions for the blade set I and II measurements are shown in Table II. The unmodified blades (set I) were tested first. A blade angle of 0° at $r/R = 0.75$ corresponds to flat pitch. Blade angle is

measured at $r/R = 0.75$. The range of test parameters was set to include the maximum test section speed condition determined from the full-scale 40- by 80-Foot Wind Tunnel. The conditions corresponding to the maximum test-section speed were: 1200 rpm (180 rpm full-scale), blade angle = 49.2° , total pressure rise across the fan of 1627 N/m^2 (39.98 lb/ft^2), and a mass flow of 166 kg/sec (11.4 slugs/sec) (ref. 1).

Blade angle (shown in fig. 11) was initially set at a low value (25°). The throttle doors were initially set at full open, after which data were collected at 480, 720, 960, and 1200 rpm. Flow swirl measurements were made at eight radial locations across the annulus between the fan and stators (station 2) for each blade angle with the throttle doors fully open. The throttle doors were then closed slightly and data were again collected at each of the four rpm settings. Note that a distribution of swirl data was not collected for the reduced-mass flow conditions. Swirl data were recorded only at the $r/R = 0.86$ location for the reduced-mass flow conditions. This procedure of incrementally closing the throttle doors and collecting data was continued until the fan stalled, as defined at the beginning of this section. After the fan stalled, the blade angle was increased to the next higher setting and the same procedure was repeated. Both blade sets were tested in a similar manner.

Correction for Swirl Flow

The total-pressure measurements made at station 2 at the condition of maximum mass flow were corrected for the measured distribution of flow swirl angle by means of the following equation:

$$P_t(\text{corrected}) = P_t(\text{measured})\cos^2 \phi + P_s(1 - \cos^2 \phi)$$

where ϕ is the mean swirl angle measured by each of the two directional probes at the same radial station as $P_t(\text{measured})$, $P_t(\text{measured})$ is the mean total pressure measured by the two total pressure rakes at each of the eight radial measurement locations, and P_s is the mean static pressure measured at four locations (90° apart) on the outer wall of the annulus.

The derivation of the swirl correction equation is given in appendix C. The subsequent calculations made on the data taken at the condition of maximum mass flow, for each blade angle involving the total pressure at station 2 (i.e., ΔP_t and efficiency), were made by using the corrected total-pressure measurements. The data taken at conditions of reduced-mass flow were not corrected for the effect of swirl angle, as flow swirl measurements were made only at the $r/R = 0.86$ location.

The total-pressure measurements were made with probes having 20° of inner chamfer. Thus, there is no error expected in these measurements below 30° of swirl (ref. 6).

Error Analysis

The acquired pressure data were accurate to $\pm 69 \text{ N/m}^2$ (1.44 lb/ft^2) ($\pm 0.01 \text{ psi}$). The fan rpm was accurate to $\pm 5 \text{ rpm}$. All other acquired data were accurate to $\pm 1\%$ of full range. The error in the derived parameters was computed using the maximum error in the measured parameters. The resulting accuracy in each of the derived parameters is summarized in Table III.

RESULTS

The following is a description of the data shown in figure 12-326. The symbols are defined in Table IV. The data shown in these figures have not had the swirl flow correction applied that was discussed in the previous section.

The results from the data runs included eight points of swirl measurement across the annulus taken at the maximum mass-flow condition (Table V). The terms with a subscript "c" (\dot{m}_c , ΔP_{tc} , η_c) denote corrected values, which are based on the axial component of flow instead of the total flow velocity.

The following types of data plots are presented: (1) total pressure change across the fan versus mass flow; fan efficiency based on total pressure change versus mass flow; (2) static pressure change across the fan versus mass flow, fan thrust versus mass flow; (3) wall static pressures; (4) swirl angle distribution at the maximum mass-flow conditions; (5) radial distributions of total pressure at stations 1, 2, and 3; (6) inlet velocity distribution; (7) fan thrust versus static pressure change across the fan; and (8) total pressure change across the fan versus static pressure change across the fan.

The total pressure change across the fan (from station 1 to station 2) versus mass flow data (at constant blade angle and variable rpm) is shown in figures 12(a)-(m) for blade sets I and II, respectively. Blade type and blade angle are noted on each plot (blade set I is the same as blade type 1 and blade set II is the same as blade type 2). The data at 54.5° blade angle (blade set I) and 53.4° blade angle (blade set II) were taken at a maximum rpm of 1100, as opposed to the 1200 rpm maximum at the other blade angles. This reduction of rpm was due to power limitations. These same data are shown in figures 13(a)-(h) for constant rpm. ΔP_{tc} was calculated by averaging all 48 total-pressure measurements at station 1 and subtracting from the average of the 16 total pressure measurements made at station 2. Although the blade angles tested were not identical for blade types I and II, the data in figure 12 gives the increased stall margin of blade type II. The increase in the stall margin is more distinct at the larger blade angles. A stall margin of 30 kg/sec (2.1 slugs/sec) in terms of mass flow was measured at a blade angle of 48° at 1200 rpm.

Fan efficiency versus mass-flow data at a constant blade angle are shown in figures 14(a)-(m) for blade sets I and II, respectively. The efficiency data shown in these figures are calculated from:

$$\eta_t = \Delta P_t \dot{V} / \text{power}$$

η has not been corrected for the error in ΔP_t caused by swirl flow. The peak efficiency based on only the axial component of flow would be reduced by approximately 5% (see appendix D). Note that the peak efficiency of the 65-series blades (blade set I) is greater than the efficiency of the modified 65-series blades (blade set II). Note the reduction in η_{tc} from that of η_t .

The static pressure changes across the fan versus the mass flow (at constant blade angle) is shown in figures 15(a)-(m) for blade sets I and II, respectively. The data in these figures appear similar to the data in figures 15(a)-(m) except for the location of the maximum point of each curve. The ΔP_s data increase up to the stall point, whereas the ΔP_t data begin to decrease prior to the actual fan stall. The measured ΔP_t decreases prior to fan stall because the swirl angle is higher than 30° for the reduced-mass flow conditions, especially on the inner portion of the annulus. The total-pressure probes given an artificially low reading for flow swirl angles greater than 30° . Thus, ΔP_s is a more accurate indicator of fan stall. The only source of error in ΔP_s which was not accounted for is the possibility of a radial static pressure distribution. However, this possibility was not investigated, as a radial distribution of static pressure was not measure. Note that the ΔP_{tc} values listed in Table 5 agree with the ΔP_s values shown in figures 15(a)-(m) for similar conditions (i.e., run number and mass flow).

The fan-thrust versus mass-flow data (at constant blade angle) is shown in figure 16. The thrust data are similar to the ΔP_t data, as expected, since thrust is related to ΔP_t by the annulus area (ref. 7).

Wall static-pressure data taken upstream of the fan between fan and stators as well as downstream of the stators are shown in figures 17(a)-(x) for blade sets I and II, respectively. The location of honeycomb, fan, and stators is shown in figure 17(a) (see also figs. 3 and 4). Wall static-pressure data were collected for all the test conditions. The data shown are a representative sample. Data at 480, 720, 960, and 1200 rpm for blade types I and II are shown at approximately 48° blade angle with the throttle doors fully open in figures 17(b)-(e) for blade set I and 17(k)-(n) for blade sets II. The rest of the data shown are at 1200 rpm, with mass flow being reduced by the throttle doors. The data at the maximum flow condition are shown in figures 17(d) and (o) for blade types I and II, respectively. The fan is running stalled in figures 17(j) and (x).

Flow swirl data across the annulus between the fan and stators are shown in figures 18(a)-(p) for blade sets I and II, respectively. Note there is very little effect on swirl angle from rpm changes and both blade sets have similar swirl. The effect of decreasing mass flow on swirl angle is shown in figures 18(d), (h), (k), and (o) at $r/R = 0.862$. The swirl angle is seen to increase with decreasing mass flow at a given rpm. From these data it was concluded that the swirl angle for the

reduced-mass flow conditions would be higher than 30° on the inboard portion of the annulus. The data shown in the other figures (i.e., figs. 18(a)-(c), (e)-(g), (i)-(k), (m)-(o) were collected with the throttle doors in the full-open position.

Rake total-pressure data for test conditions with throttle doors in the full-open position are presented in figures 19-72. These include data at 480, 720, 960, and 1200 rpm, all blade angles and the measurement stations 1, 2, and 3. The rake total pressure data at the reduced mass flow conditions are tabulated in appendix D. The run conditions for the data shown in appendix D are shown in the appendix D figures and in Table II.

Fan-inlet-velocity data are shown in figures 73(a)-(j) and (k)-(v) for blade sets I and II, respectively. This is a representative sample of all the inlet data collected. The data shown correspond to the data in figures 17(a)-(x).

Fan-thrust versus static-pressure-change across the fan is shown in figures 74(a)-(r) for blade sets I and II, respectively.

Total pressure versus static pressure across the fan is shown in figures 75(a)-(l) for blade sets I and II, respectively.

CONCLUSIONS

A 3-D, 15%-scale, single-fan drive test was conducted to evaluate the performance of two similar sets of fan blades, to be used in the National Full-Scale Aerodynamic Complex at NASA Ames Research Center. The design of the first set of fan blades used NACA 65-series airfoil sections. The second set of fan blades incorporated increased thickness on the upper surface between the leading edge and the one-half-chord position as a modification to the basic 65-series airfoil sections. The following conclusions were reached:

1. The fan blades composed of modified NACA 65-series airfoil sections have a higher stall margin than the fan blades composed of unmodified 65-series airfoil sections. (A stall margin of 30 kg/sec, in terms of mass flow, was measured at a blade angle of 48° at 1200 rpm.)
2. The modified 65-series fan-blade stall was no more abrupt than the unmodified 65-series-blade stall.
3. Static pressure change across the fan is the most reliable indicator of fan stall, as it does not include errors caused by flow swirl.
4. The static pressure change across the fan is the same as the total pressure change across the fan when the total pressure change is corrected for the effects of swirl flow.
5. The fan efficiency for the 65-series-section fan blades is higher than the efficiency for the modified 65-series-section fan blades.

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TABLE 1.- BLADE SET I AND II, TWIST AND TAPER

SECTION	r/R	TWIST, deg	TAPER, c/R
1	0.4375	0.0	0.201
2	0.5	6.7	0.195
3	0.5833	13.1	0.187
4	0.6667	18.6	0.179
5	0.75	23.3	0.171
6	0.8333	27.4	0.164
7	0.9167	30.9	0.156
8	1.0000	34.2	0.147

NOTE: TWIST IS MEASURED RELATIVE TO THE ROOT (SECTION 1). POSITIVE TWIST IS IN THE COUNTER-CLOCKWISE DIRECTION WHEN ONE IS LOOKING OUTWARD FROM THE ROOT TO THE TIP.

TABLE 2.- CONDENSED TEST RUNLOG

RUN NO.	THROTTLE DOOR POSITION, in. ^a	rpm ^b	DATA POINTS	PROBE POSITION/ COMMENTS ^c
BLADE SET 1, BLADE ANGLE 24.9°				
11	35	1200	8	1-8
13		1200	7	1-8
14		480	1	5
		720	1	6
		960	1	6
15	23	480	1	6
		720	1	5
		960	1	4
		1200	1	3
16	15	480	1	6
		720	1	5
		960	1	4
		1200	1	3
17	9	480	1	6
		720	1	5
		960	1	4
		1200	1	3
18	5	480	1	6
		720	1	5
		960	1	4
		1200	1	3
				FAN STALLED
BLADE SET 1, BLADE ANGLE 36.0°				
19	35	1200	2	1, 2
20		960	2	3, 4
21		720	2	5, 6
22		480	2	7, 8
23		480	8	1-8
24		720	8	1-8
25		960	8	1-8
26		1200	8	1-8
27, 28, 29, 30	23	480, 720, 960, 1200	4	3 (1 DATA POINT/RUN)
31, 32, 33, 34	20	480, 720, 960, 1200	4	3
35, 36, 37, 38	18	480, 720, 960, 1200	4	3
39, 40, 41, 42	15	480, 720, 960, 1200	4	3
43, 44, 45, 46	12	480, 720, 960, 1200	4	3
				FAN STALLED AT 480, 720
47, 48	9	960, 1200	2	3 FAN STALLED

RUN NO.	THROTTLE DOOR POSITION, in. ^a	rpm ^b	DATA POINTS	PROBE POSITION/ COMMENTS ^c
BLADE SET 1, BLADE ANGLE 34.0°				
49	35	480, 720, 960, 1200	4	3
50	35	480	8	1-8
51		720	8	1-8
52		960	8	1-8
53		1200	8	1-8
54, 55, 56, 57	27	480, 720, 960, 1200	4	3
58, 59, 60, 61	23	480, 720, 960, 1200	4	3
62, 63, 64, 65	20	480, 720, 960, 1200	4	3
66, 67, 68, 69	18	480, 720, 960, 1200	4	3
70, 71, 72, 73	15	480, 720, 960, 1200	4	3
74, 75, 76, 77	12	480, 720, 960, 1200	4	3
78, 79, 80, 81	9	480, 720, 960, 1200	4	3 FAN STALLED
BLADE SET 1, BLADE ANGLE 44.3°				
82	35	480	8	1-8
83		720	8	1-8
84		960	8	1-8
85		1200	8	1-8
86, 87, 88, 89	27	480, 720, 960, 1200	4	3
90, 91, 92, 93	23	480, 720, 960, 1200	4	3
94, 95, 96, 97	21	480, 720, 960, 1200	4	3
98, 99, 100, 101	18	480, 720, 960, 1200	4	3
102, 103, 104, 105	15	480, 720, 960, 1200	4	3 FAN STALLED
BLADE SET 1, BLADE ANGLE 48.5°				
106	39	480	8	LEFT TRAVERSE PROBE IN POSITION 1, RT PROBE POSITIONS 1-8
107		720	8	LEFT TRAVERSE PROBE IN POSITION 1, RT PROBE POSITIONS 1-8
108		960	8	LEFT TRAVERSE PROBE IN POSITION 1, RT PROBE POSITIONS 1-8
109		1200	8	LEFT TRAVERSE PROBE IN POSITION 1, RT PROBE POSITIONS 1-8
110, 111, 112, 113	35	480, 720, 960, 1200	4	3
114, 115, 116, 117	28	480, 720, 960, 1200	4	3
118, 119, 120, 121	23	480, 720, 960, 1200	4	3
122, 123, 124, 125	20	480, 720, 960, 1200	4	3
126, 127, 128, 129	18	480, 720, 960, 1200	4	3
130, 131, 132, 133	15	480, 720, 960, 1200	4	3 FAN STALLED

TABLE 2.- CONTINUED.

RUN NO.	THROTTLE DOOR POSITION, in. ^a	rpm ^b	DATA POINTS	PROBE POSITION/ COMMENTS ^c
BLADE SET 1, BLADE ANGLE, 54.5°				
134	39	480	8	LEFT TRAVERSE PROBE IN POSITION 3, RT PROBE POSITIONS 1-8
135		720	8	LEFT TRAVERSE PROBE IN POSITION 3, RT PROBE POSITIONS 1-8
136		960	8	LEFT TRAVERSE PROBE IN POSITION 3, RT PROBE POSITIONS 1-8
137		1100	8	LEFT TRAVERSE PROBE IN POSITION 3, RT PROBE POSITIONS 1-8
138, 139, 140, 141	35	480, 720, 960, 1200	4	DATA LOST IN TRANSFER
142, 143, 144, 145	28	480, 720, 960, 1100	4	3
146, 147, 148, 149	23	480, 720, 960, 1100	4	3
150, 151, 152, 153	20	480, 720, 960, 1100	4	3 FAN STALLED
154-218				** NO DATA **
BLADE SET 2, BLADE ANGLE 41.2°				
219	35	480	8	1-8
221		720	8	1-8
223		960	8	1-8
224		1200	8	1-8
225, 226, 227, 228	27	480, 720, 960, 1200	4	3
229, 230, 231, 232	23	480, 720, 960, 1200	4	3
233, 234, 235, 236	20	480, 720, 960, 1200	4	3
237, 238, 239, 240	18	480, 720, 960, 1200	4	3
241, 242, 243, 244	15	480, 720, 960, 1200	4	3
245, 246, 247, 248	12	480, 720, 960, 1200	4	3 FAN STALLED. RUN 247 WAS LOST, RUN 248 COPIED INTO RUN 747 FOR DATA REDUCTION
BLADE SET 2, BLADE ANGLE 43.5°				
249	34.5	480	8	1-8
250		720	8	1-8
251		960	8	1-8
252		1200	8	1-8
253, 254, 255, 256	27	480, 720, 960, 1200	4	3
257, 258, 259, 260	23	480, 720, 960, 1200	4	3
261, 262, 263, 264	20	480, 720, 960, 1200	4	3
265, 266, 267, 268	18	480, 720, 960, 1200	4	3
269, 270, 271, 272	15	480, 720, 960, 1200	4	3
273, 274, 275, 276	12	480, 720, 960, 1200	4	3 FAN STALLED
777, 278, 279, 280	13	480, 720, 960, 1200	4	3 FAN STALLED RUN 277 WAS LOST, RUN 278 COPIED INTO RUN 777 FOR DATA REDUCTION

TABLE 2.- CONTINUED.

RUN NO.	THROTTLE DOOR POSITION, in. ^a	rpm ^b	DATA POINTS	PROBE POSITION/ COMMENTS ^c
BLADE SET 2, BLADE ANGLE 47.6°				
281	35	480	8	1-8
282		720	8	1-8
283		960	8	1-8
284		1200	8	1-8
285, 286, 287, 288	27	480, 720, 960, 1200	4	3
289, 290, 291, 292	23	480, 720, 960, 1200	4	3
293, 294, 295, 296	21	480, 720, 960, 1200	4	3
297, 298, 299, 300	19	480, 720, 960, 1200	4	3
301, 302, 303, 304	18	480, 720, 960, 1200	4	3
305, 306, 307, 308	17	480, 720, 960, 1200	4	3
309, 310, 311, 312	16	480, 720, 960, 1200	4	3
313, 314, 315, 316	15	480, 720, 960, 1200	4	3
317, 318, 319, 320	13.3	480, 720, 960, 1200	4	3 FAN STALLED
BLADE SET 2, BLADE ANGLE 35.4°				
321	35	480	8	1-8
322		720	8	1-8
323		960	8	1-8
324		1200	8	1-8
325, 326, 327, 328	28	480, 720, 960, 1200	4	3
329, 330, 331, 332	23	480, 720, 960, 1200	4	3
333, 334, 335, 336	20	480, 720, 960, 1200	4	3
337, 338, 339, 340	18	480, 720, 960, 1200	4	3
341, 342, 343, 344	15	480, 720, 960, 1200	4	3
345, 346, 347, 348	12	480, 720, 960, 1200	4	3 FAN STALLED
349, 350, 351, 352	11	480, 720, 960, 1200	4	3 FAN AND STATOR STALLED
BLADE SET 2, BLADE ANGLE 53.4°				
353	L-34.5	480	8	1-8
354	R-43.5	720	8	1-8
355		960	8	1-8
356		1200	8	1-8
357, 358, 359, 360	34	480, 720, 960, 1200	4	3
361, 362, 363, 364	27	480, 720, 960, 1200	4	3
365, 366, 367, 368	23	480, 720, 960, 1200	4	3
369, 370, 371, 372	20	480, 720, 960, 1200	4	3
373, 374, 375, 376	18	480, 720, 960, 1200	4	3
377, 378, 379, 380	16	480, 720, 960, 1200	4	3 FAN STALLED

TABLE 2. - CONTINUED.

RUN NO.	THROTTLE DOOR POSITION, in. ^a	rpm ^b	DATA POINTS	PROBE POSITION/ COMMENTS C
BLADE SET 2, BLADE ANGLE 29.2°				
381	34	480	8	1-8
382		720	8	1-8
383		960	8	1-8
384		1200	7	1-7
385, 386, 387, 388	27	480, 720, 960, 1200	4	3
389, 390, 391, 392	23	480, 720, 960, 1200	4	3
393, 394, 395, 396	18	480, 720, 960, 1200	4	3
397, 398, 399, 400	15	480, 720, 960, 1200	4	3
410, 402, 403, 404	13	480, 720, 960, 1200	4	3
905, 406, 407, 408	9	480, 720, 960, 1200	4	3 RUN 405 WAS LOST, RUN 406 COPIED INTO RUN 905 FOR DATA REDUCTION
409, 410, 411, 412	5	480, 720, 960, 1200	4	3 FAN STALLED
413, 414, 415, 416	11	480, 720, 960, 1200	4	3
417, 418, 419, 420	9.75	480, 720, 960, 1200	4	3
421, 422, 423, 424	7	480, 720, 960, 1200	4	3
BLADE SET 2, BLADE ANGLE 35.4°				
425	34	480	8	3
426		720	8	3
427		960	8	3
428		1200	8	3
				RUNS 425-468 ARE REPEAT OF 321-352 CONDITIONS
325, 326, 327, 328	28	480, 720, 960, 1200	4	3
429, 430, 431, 432	27	480, 720, 960, 1200	4	3
433, 434, 435, 436	23	480, 720, 960, 1200	4	3
437, 438, 439, 440	20	480, 720, 960, 1200	4	3
441, 442, 443, 444	18	480, 720, 960, 1200	4	3
445, 446, 447, 448	15	480, 720, 960, 1200	4	3
449, 450, 451, 452	13.5	480, 720, 960, 1200	4	3
453, 454, 455, 456	12	480, 720, 960, 1200	4	3
457, 458, 459, 460	11	480, 720, 960, 1200	4	3
461, 462, 463, 464	10	480, 720, 960, 1200	4	3
465, 466, 467, 468	9	480, 720, 960, 1200	4	3 FAN STALLED
BLADE SET 2, BLADE ANGLE 24.5°				
469	34	480	8	1-8
470		720	8	1-8
471		960	8	1-8
472		1200	8	1-8
473, 474, 475, 976	27	480, 720, 960, 1200	4	3 RUN 476 WAS LOST, RUN 475 COPIED INTO RUN 976 FOR DATA REDUCTION
477, 478, 479, 480	23	480, 720, 960, 1200	4	3
481, 482, 483, 484	20	480, 720, 960, 1200	4	3
485, 486, 487, 488	15	480, 720, 960, 1200	4	3
489, 490, 491, 492	9.5	480, 720, 960, 1200	4	3
493, 494, 495, 496	5	480, 720, 960, 1200	4	3 FAN STALLED
497, 498, 499, 500	7	480, 720, 960, 1200	4	3

TABLE 2.- CONCLUDED.

^aTHERE WERE TWO THROTTLE DOORS AT THE EXIT OF THE FAN DUCT THAT WERE USED TO DECREASE THE MASS FLOW THROUGH THE FAN, LOCATED APPROXIMATELY 30 ft DOWNSTREAM OF THE FAN. EACH DOOR WAS HINGED ALONG THE VERTICAL CENTERLINE OF THE RECTANGULAR EXIT SECTION. UNLESS NOTED BOTH DOORS WERE PLACED IN THE SAME POSITION. THE THROTTLE DOOR POSITIONS LISTED ABOVE ARE MEASUREMENTS OF THE DOOR OPENING, FROM THE DOOR JAM TO THE EDGE OF THE DOOR. THE ACTUAL EXIT AREA WAS NOT COMPUTED.

^bTHE BLADE TIP SPEEDS TESTED WERE:

115 m/sec	(377 ft/s)	AT	1200 rpm
92 m/sec	(302 ft/s)	AT	960 rpm
69 m/sec	(226 ft/s)	AT	720 rpm
46 m/sec	(151 ft/s)	AT	480 rpm

^cTHERE WERE TWO MOVABLE DIRECTIONAL PRESSURE PROBES USED TO MEASURE THE SWIRL ANGLE GOING INTO THE STATORS. THE PROBES WERE USED TO MEASURE THE FLOW SWIRL DIRECTION BETWEEN THE FAN AND STATORS. THESE PROBES WERE MOUNTED ON OPPOSITE SIDES OF THE DUCT (18° apart). EACH PROBE HAD ONE MEASUREMENT HEAD, WHICH WAS TRAVERSED ACROSS THE ANNULUS. DIRECTIONAL FLOW DATA WAS COLLECTED FROM EIGHT POSITIONS ACROSS THE ANNULUS, AND UNLESS NOTED BOTH PROBES WERE IN THE SAME RADIAL POSITION.

PROBE POSITION	DISTANCE, MEASURED FROM OUTER WALL:		DIMENSIONALIZED WITH TIP RADIUS (36.125 in.)
	in	(m)	
1	0.95	0.024	0.974
2	2.90	0.074	0.920
3	4.97	0.126	0.862
4	7.19	0.183	0.801
5	9.59	0.244	0.735
6	12.24	0.311	0.661
7	15.22	0.387	0.579
8	18.72	0.476	0.482

TABLE 3.- PARAMETER ACCURACY

VARIABLE	ACCURACY (percent of full scale)	DIMENSIONAL
DYNAMIC PRESSURE	± 3.8	$\pm 138 \text{ N/m}^2$
VELOCITY	2.7	2.1 m/s
VOLUME FLOW	2.8	4.6 m^3/sec
MASS FLOW	4.4	8.7 kg/s
TOTAL PRESSURE RISE	2.0	60 N/m^2
STATIC PRESSURE RISE	2.0	65 N/m^2
POWER	1.5	7.5 kW
AXIAL FORCE	2.0	130 N
EFFICIENCY	7.0	0.07
SWIRL ANGLE	1.0	0.3°

TABLE 4.- DEFINITION OF PLOT SYMBOLS

FIGURE NUMBERS	PARAMETER	SYMBOL
12-24	rpm	○
33-70	480	□
301,312	720	△
	960	▽
	1200 or 1100	
	BLADE ANGLE	
25-28	54.5	x
	48.5	+
	44.3	*
	36.0	▽
	34.0	●
	24.9	□
29-32	53.4	x
	47.6	+
	41.2	*
	35.4	▽
	29.2	●
	24.5	□
	STATIC PRESSURES	
71-93	LEFT SIDE	○
	TOP	△
	RIGHT SIDE	+
	STATION 1	x
	STATION 2	◇
	STATION 3	▽
94-109	SWIRL ANGLE	
	RIGHT SIDE	○
	LEFT SIDE	△
	TOTAL PRESSURES	
110-277	STATION 1	
	RAKE 1	○
	RAKE 2	△
	RAKE 3	+
	RAKE 4	x
	RAKE 5	◇
	RAKE 6	▽
	STATION 2	
	RAKE 1	○
	RAKE 2	△
	STATION 3	
	RAKE 1	○
	RAKE 2	△
	RAKE 3	+
	RAKE 4	x
278-300	VELOCITY	
	STATION 1	
	RAKE 1	○
	RAKE 2	△
	RAKE 3	+
	RAKE 4	x
	RAKE 5	◇
	RAKE 6	▽

TABLE 5.- MASS FLOW, TOTAL PRESSURE CHANGE, AND EFFICIENCY WITH CORRECTION FOR SWIRL ANGLE

RUN NO	rpm	MEAS. STA.	MASSFLOW, Kg/sec		TOTAL PRESSURE, N/m ²		FAN EFFICIENCY	
			UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED
BLADE SET 1								
11	1200	1	116.16		1074.92	988.07	0.936	0.860
11	1200	2	125.32	121.60	-384.94	-298.09	-0.335	-0.259
11	1200	3	99.11		689.98		0.601	
23	480	1	61.55		290.02	259.22	0.982	0.878
23	480	2	64.89	62.34	-26.72	4.08	-0.090	0.014
23	480	3	62.56		263.30		0.891	
24	720	1	92.49		638.11	583.15	0.972	0.888
24	720	2	97.35	94.12	-44.08	10.88	-0.067	0.017
24	720	3	94.39		594.03		0.905	
25	960	1	98.91		1126.97	1025.19	0.969	0.882
25	960	2	104.08	125.52	-61.96	39.81	-0.053	0.034
25	960	3	101.38		1065.00		0.916	
26	1200	1	155.37		1746.61	1570.62	0.964	0.867
26	1200	2	162.89	156.25	-76.16	99.83	-0.042	0.055
26	1200	3	159.49		1670.45		0.921	
50	480	1	58.22		255.47	246.11	0.953	0.918
50	480	2	61.51	60.66	-18.44	-9.07	-0.069	-0.034
50	480	3	59.48		237.04		0.885	
51	720	1	87.73		571.58	518.80	0.951	0.863
51	720	2	92.62	89.37	-43.09	9.69	-0.072	0.016
51	720	3	89.87		528.49		0.879	
52	960	1	117.92		1019.85	919.37	0.953	0.859
52	960	2	124.43	119.55	-67.15	33.33	-0.062	0.311
52	960	3	120.84		952.71		0.890	
53	1200	1	147.48		1577.57	1425.45	0.955	0.863
53	1200	2	155.15	149.49	-88.41	63.71	-0.054	0.039
53	1200	3	151.39		1489.16		0.901	
82	480	1	71.56		372.28	296.55	0.920	0.733
82	480	2	73.87	66.70	-31.24	44.50	-0.077	0.110
82	480	3	71.45		341.04		0.843	
83	720	1	109.06		869.69	763.92	0.951	0.835
83	720	2	112.90	107.39	-67.67	38.11	-0.074	0.042
83	720	3	109.76		802.02		0.877	
84	960	1	147.68		1568.85	1366.99	0.968	0.843
84	960	2	153.14	145.06	-107.05	94.81	-0.066	0.059
84	960	3	148.49		1461.80		0.902	
85	1200	1	184.83		2454.80	2154.62	0.982	0.862
85	1200	2	191.70	182.34	-172.89	127.28	-0.069	0.051
85	1200	3	185.47		2281.90		0.913	

TABLE 5.- CONTINUED.

RUN NO	rpm	MEAS. STA.	MASSFLOW, Kg/sec		TOTAL PRESSURE, N/m ²		FAN EFFICIENCY	
			UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED
106	480	1	80.92		425.82	327.19	0.935	0.719
106	480	2	83.37	75.22	-100.99	-2.35	-0.222	-0.005
106	480	3	75.44		324.84		0.714	
107	720	1	121.56		972.44	829.61	0.953	0.813
107	720	2	126.11	119.22	-229.94	-87.10	-0.225	-0.085
107	720	3	114.31		742.51		0.728	
108	960	1	162.66		1729.29	1467.05	0.959	0.814
108	960	2	169.13	159.45	-392.89	-130.65	-0.218	-0.072
108	960	3	154.26		1336.40		0.741	
109	1200	1	204.45		2705.13	2295.44	0.973	0.826
109	1200	2	211.99	200.02	-597.90	-188.21	-0.215	-0.068
109	1200	3	193.60		2107.23	2107.23	0.758	
134	480	1	87.55		488.52	404.60	0.923	0.764
134	480	2	89.35	83.71	-102.02	-18.11	-0.193	-0.034
134	480	3	82.34		386.50		0.730	
135	720	1	132.58		1118.44	931.30	0.937	0.780
135	720	2	135.15	126.90	-225.47	-38.33	-0.189	-0.032
135	720	3	125.33		892.97		0.748	
136	960	1	177.75		2002.21	1658.11	0.951	0.787
136	960	2	181.54	170.02	-407.54	-63.44	-0.193	-0.030
136	960	3	167.70		1594.67		0.757	
137	1100	1	203.95		2638.22	2184.36	0.961	0.796
137	1100	2	208.39	195.02	-544.82	-90.96	-0.198	-0.033
137	1100	3	191.67		2093.41		0.763	
BLADE SET 2								
219	480	1	68.53		352.28	313.03	0.937	0.832
219	480	2	71.03	67.89	-14.35	24.90	-0.038	0.066
219	480	3	69.78		337.93		0.899	
221	720	1	103.34		787.58	702.33	0.948	0.846
221	720	2	107.25	102.44	-39.53	45.71	-0.048	0.056
221	720	3	104.98		748.04		0.901	
223	960	1	138.56		1418.74	1251.46	0.956	0.844
223	960	2	144.38	137.23	-72.89	94.39	-0.049	0.064
223	960	3	141.09		1345.85		0.907	
224	1200	1	174.22		2242.97	1993.01	0.972	0.864
224	1200	2	181.95	173.88	-120.37	129.59	-0.052	0.056
224	1200	3	177.07		2122.61		0.920	
249	480	1	69.58		370.17	326.48	0.919	0.811
249	480	2	72.83	69.23	-15.16	28.52	-0.038	0.071
249	480	3	71.26		355.00		0.682	
250	720	1	105.76		845.81	737.10	0.927	0.808
250	720	2	110.21	104.03	-33.20	75.51	-0.036	0.083
250	720	3	108.07		812.61		0.891	
251	960	1	142.72		1542.81	1348.24	0.942	0.823
251	960	2	149.14	141.17	-68.76	125.82	-0.042	0.077
251	960	3	145.89		1474.05		0.900	

TABLE 5.- CONTINUED.

RUN NO	rpm	MEAS. STA.	MASSFLOW, Kg/sec		TOTAL PRESSURE, N/m ²		FAN EFFICIENCY	
			UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED
252	1200	1	180.07		2438.64	2144.92	0.962	0.846
252	1200	2	188.25	178.94	-123.85	169.88	-0.049	0.067
252	1200	3	183.16		2314.79		0.913	
281	480	1	75.19		415.07	362.76	0.898	0.785
281	480	2	77.70	73.72	-7.74	44.57	-0.017	0.096
281	480	3	76.52		407.33		0.881	
282	720	1	114.76		957.97	825.29	0.910	0.784
282	720	2	118.27	111.66	-13.88	118.80	-0.013	0.113
282	720	3	117.35		944.09		0.897	
283	960	1	154.54		1719.68	1473.40	0.918	0.787
283	960	2	159.33	149.94	-30.04	216.24	-0.016	0.115
283	960	3	157.47		1689.65		0.902	
284	1200	1	195.04		2702.82	2329.03	0.938	0.809
284	1200	2	201.04	189.88	-72.93	300.86	-0.025	0.104
284	1200	3	197.20		2629.89		0.913	
321	480	1	59.19		272.64	247.10	0.943	0.855
321	480	2	62.60	60.39	-22.67	2.87	-0.078	0.010
321	480	3	60.44		249.97		0.864	
322	720	1	89.26		622.67	559.74	0.946	0.850
322	720	2	94.79	90.92	-51.82	11.11	-0.079	0.017
322	720	3	91.47		570.85		0.867	
323	960	1	120.44		1116.52	1001.96	0.948	0.850
323	960	2	127.47	122.27	-81.39	33.17	-0.069	0.028
323	960	3	123.76		1035.13		0.879	
324	1200	1	150.44		1719.87	1542.82	0.949	0.851
324	1200	2	159.05	152.35	-103.58	73.47	-0.057	0.041
324	1200	3	154.46		1616.30		0.892	
353	480	1	85.61		480.83	403.55	0.892	0.749
353	480	2	87.99	82.77	0.95	78.24	0.002	0.145
353	480	3	87.22		481.78		0.894	
354	720	1	130.36		1111.27	924.10	0.899	0.747
354	720	2	133.92	125.32	0.54	187.71	0.000	0.152
354	720	3	132.60		1111.80		0.899	
355	960	1	173.80		1971.99	1650.93	0.914	0.765
355	960	2	178.41	167.70	-15.99	305.08	-0.007	0.141
355	960	3	175.83		1956.01		0.906	
356	1100	1	197.99		2558.95	2132.21	0.919	0.766
356	1100	2	203.40	190.58	-33.91	392.83	-0.012	0.141
356	1100	3	199.71		2525.04		0.907	
381	480	1	50.96		205.99	188.11	0.920	0.840
381	480	2	54.64	52.91	-19.53	-1.65	-0.087	-0.007
381	480	3	52.08		186.46	186.46	0.834	
382	720	1	76.39		462.94	425.00	0.921	0.845
382	720	2	82.33	79.57	-39.53	-1.58	-0.079	-0.003
382	720	3	78.97		423.41	423.41	0.842	

TABLE 5.- CONCLUDED.

RUN NO	rpm	MEAS. STA.	MASSFLOW, Kg/sec		TOTAL PRESSURE, N/m ²		FAN EFFICIENCY	
			UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED	UNCORRECTED	CORRECTED
383	960	1	102.58		821.38	748.50	0.919	0.838
383	960	2	109.86	106.12	-59.78	13.10	-0.067	0.015
383	960	3	106.25		761.60		0.852	
384	1200	1	128.88		1285.67	1205.15	0.922	0.864
384	1200	2	137.64	134.24	-87.52	-7.01	-0.063	-0.005
384	1200	3	133.47		1198.15		0.859	
469	480	1	42.20		154.42	126.43	0.811	0.664
469	480	2	46.97	42.49	-10.83	17.16	-0.057	0.090
469	480	3	5.34		143.59		0.754	
470	720	1	66.39		363.81	335.73	0.883	0.815
470	720	2	72.38	70.12	-31.02	-2.95	-0.075	-0.007
470	720	3	69.35		332.79		0.808	
471	960	1	88.89		639.21	590.30	0.885	0.817
471	960	2	96.05	93.27	-50.57	-1.66	-0.070	-0.002
471	960	3	92.52		588.63		0.815	
472	1200	1	112.20		1016.16	931.35	0.897	0.822
472	1200	2	120.95	117.33	-78.74	6.07	-0.069	0.005
472	1200	3	116.79		937.42		0.827	

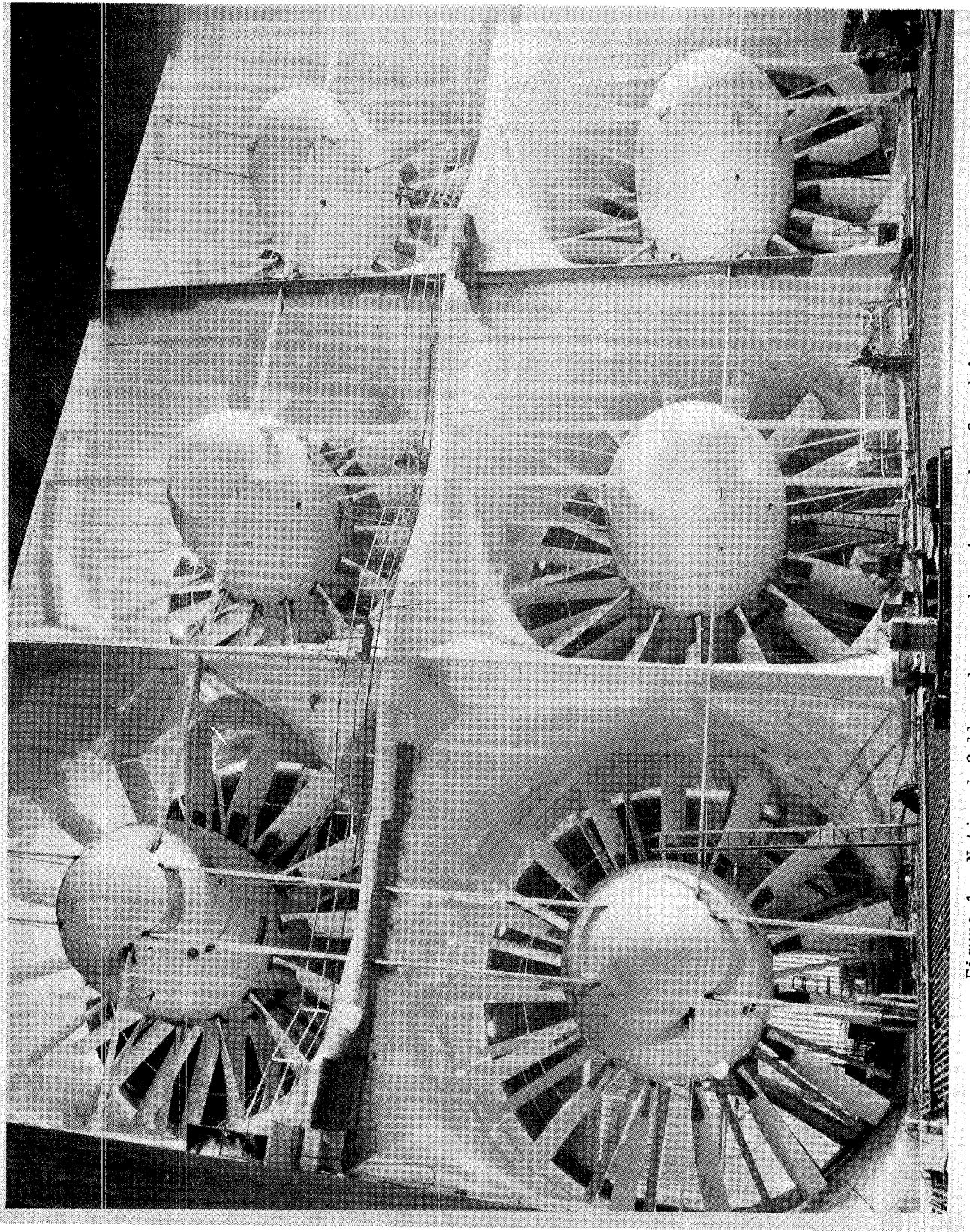


Figure 1.- National full-scale aerodynamic complex fan-drive system.

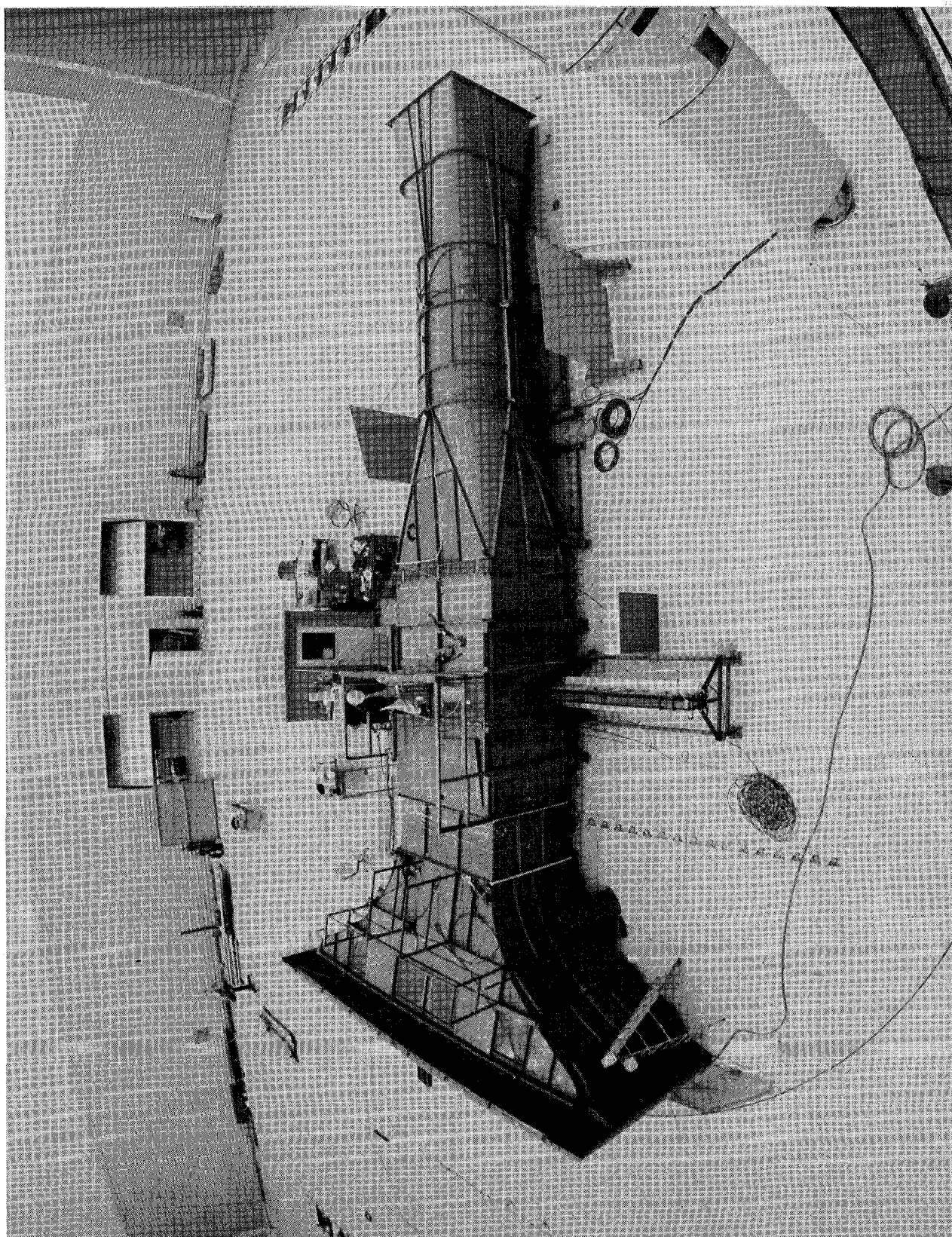


Fig. 2.- Test model.

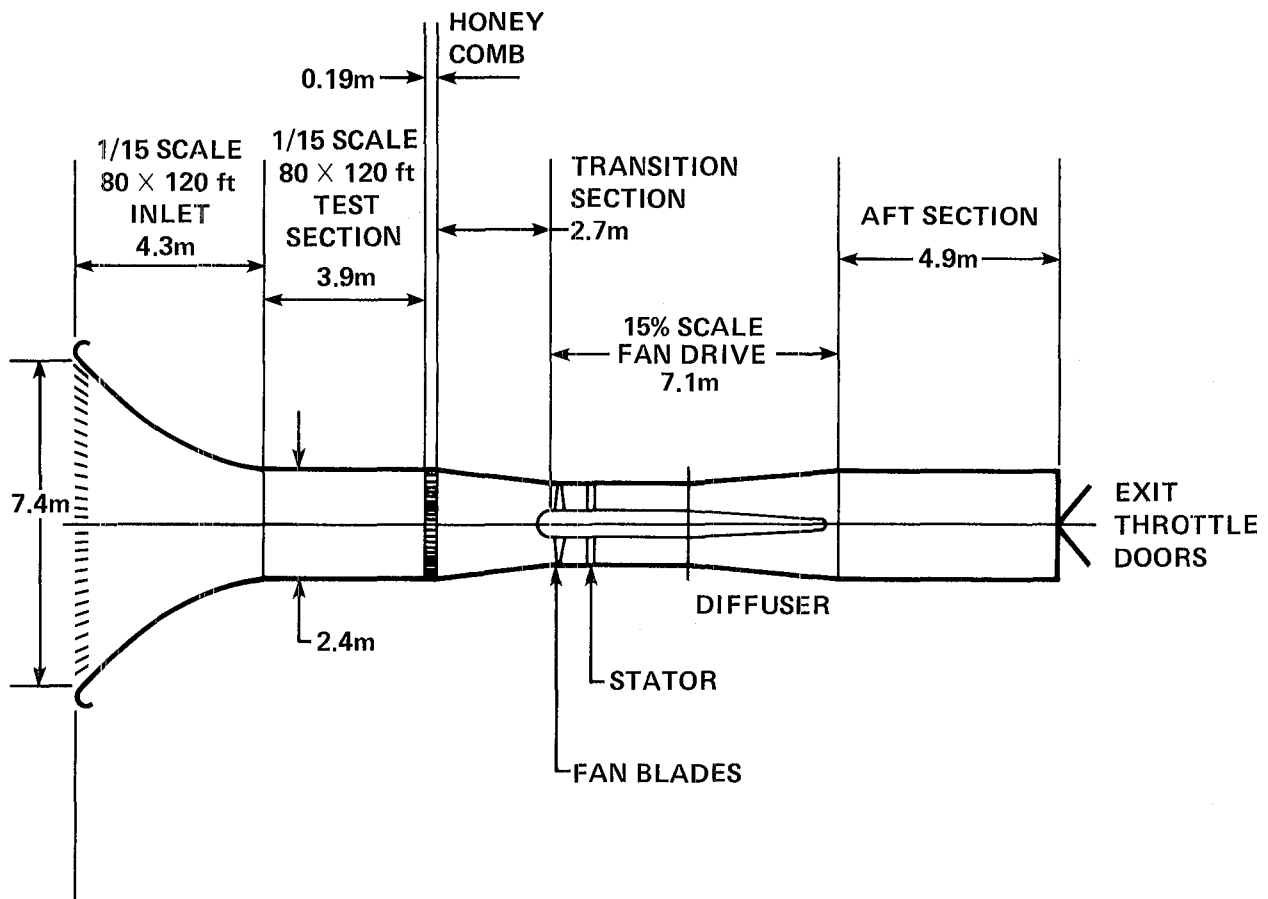


Figure 3.- Test facility components.

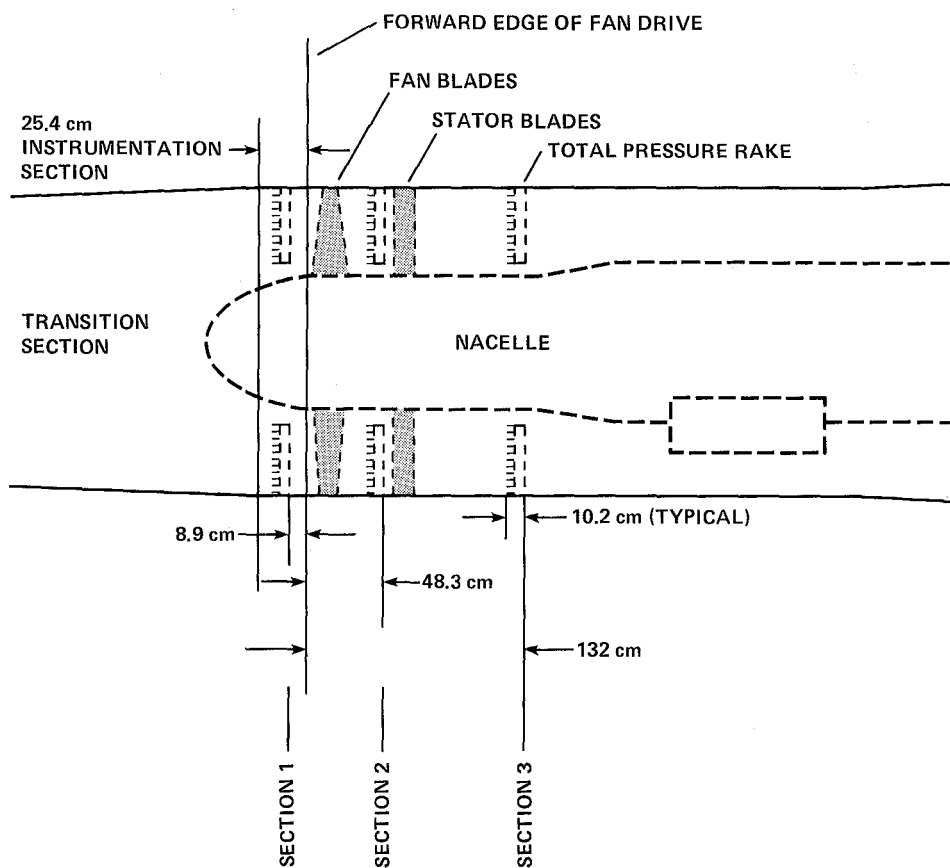


Figure 4.- 15%-scale fan drive section.

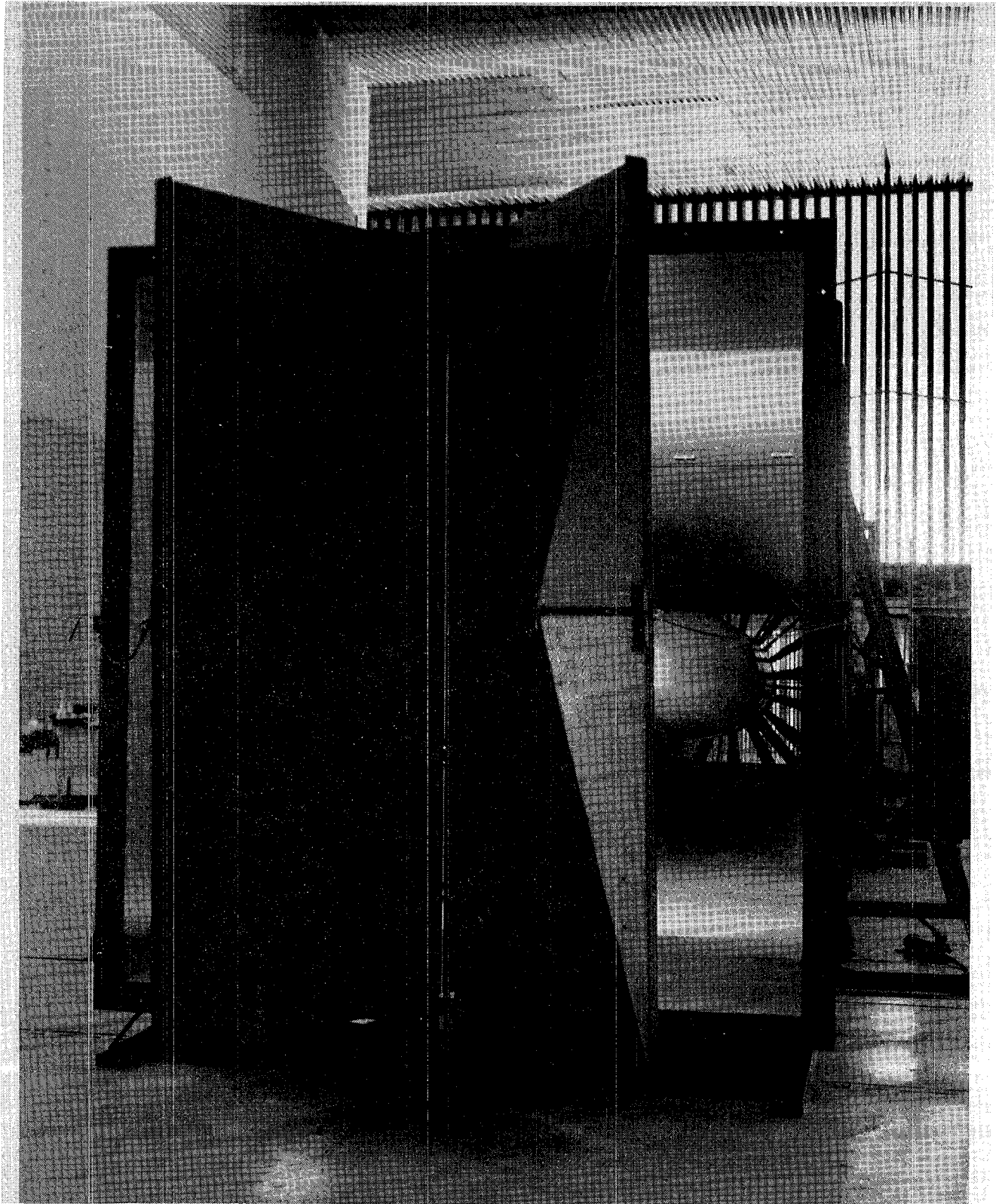


Figure 5a.- Exit throttle doors.

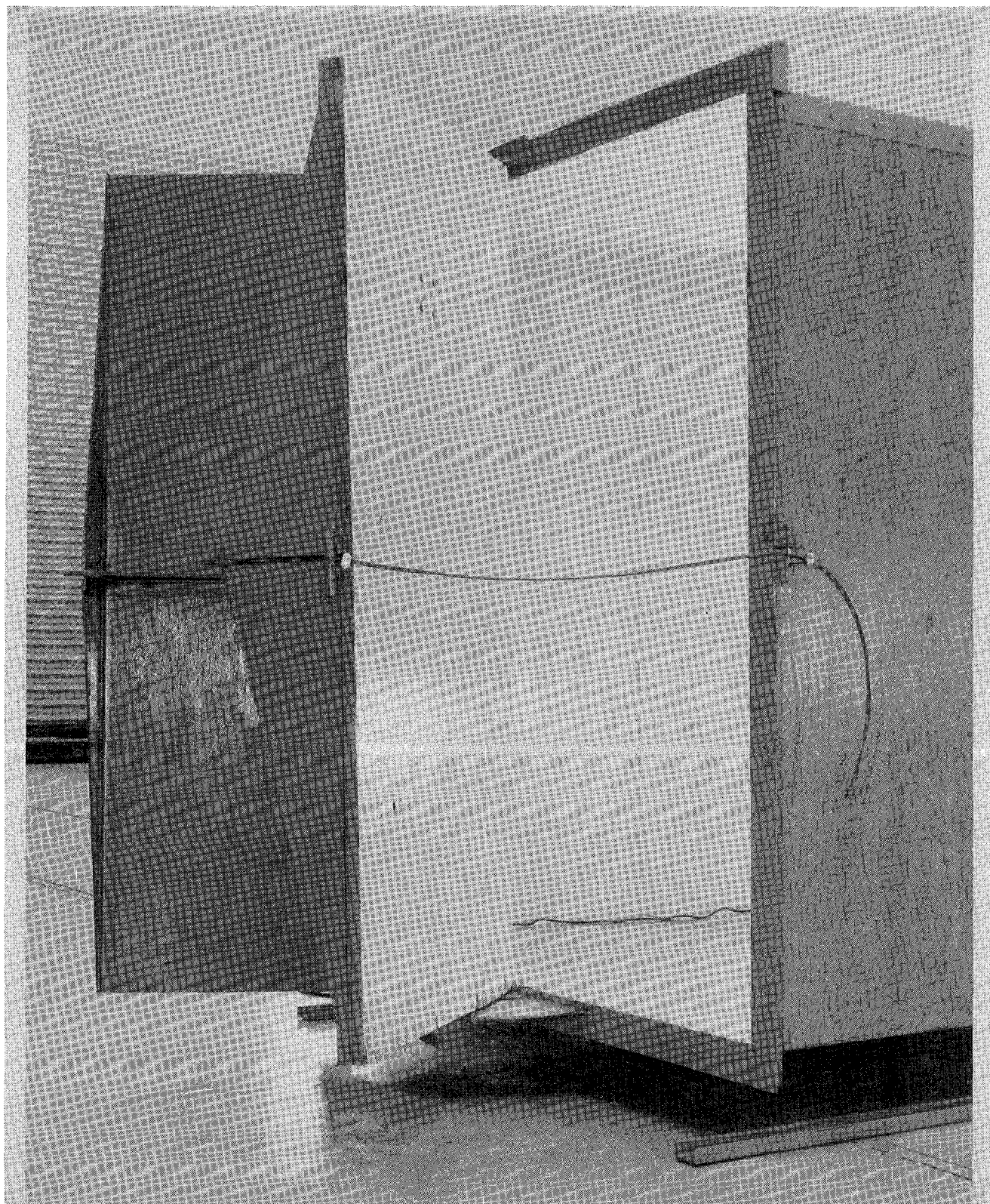


Figure 5b.- Exit throttle doors.

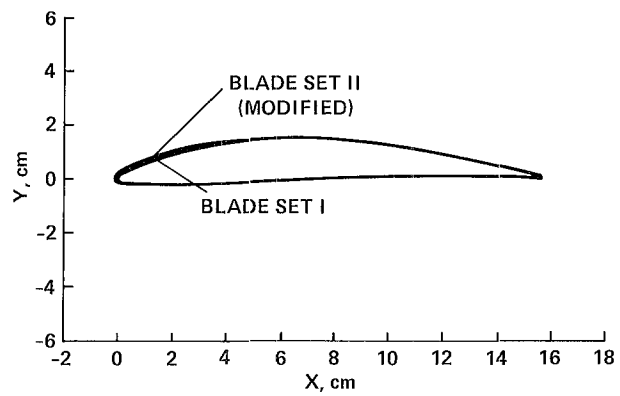


Figure 6.- 65-series section (blade set I) and modified 65-series section (blade set II) coordinates at $r/R = 0.75$.

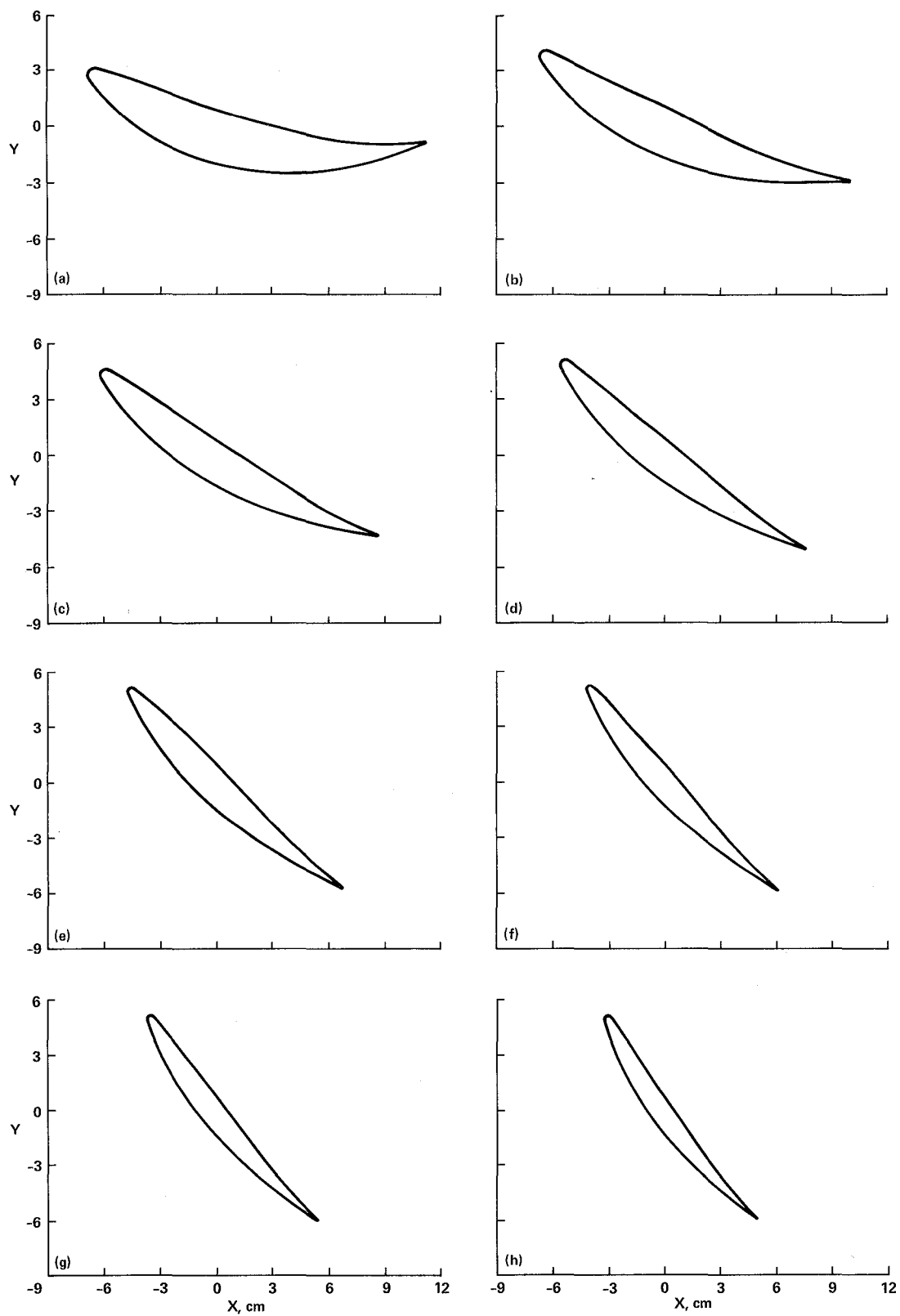


Figure 7.- NACA-65 series fan blade sections.

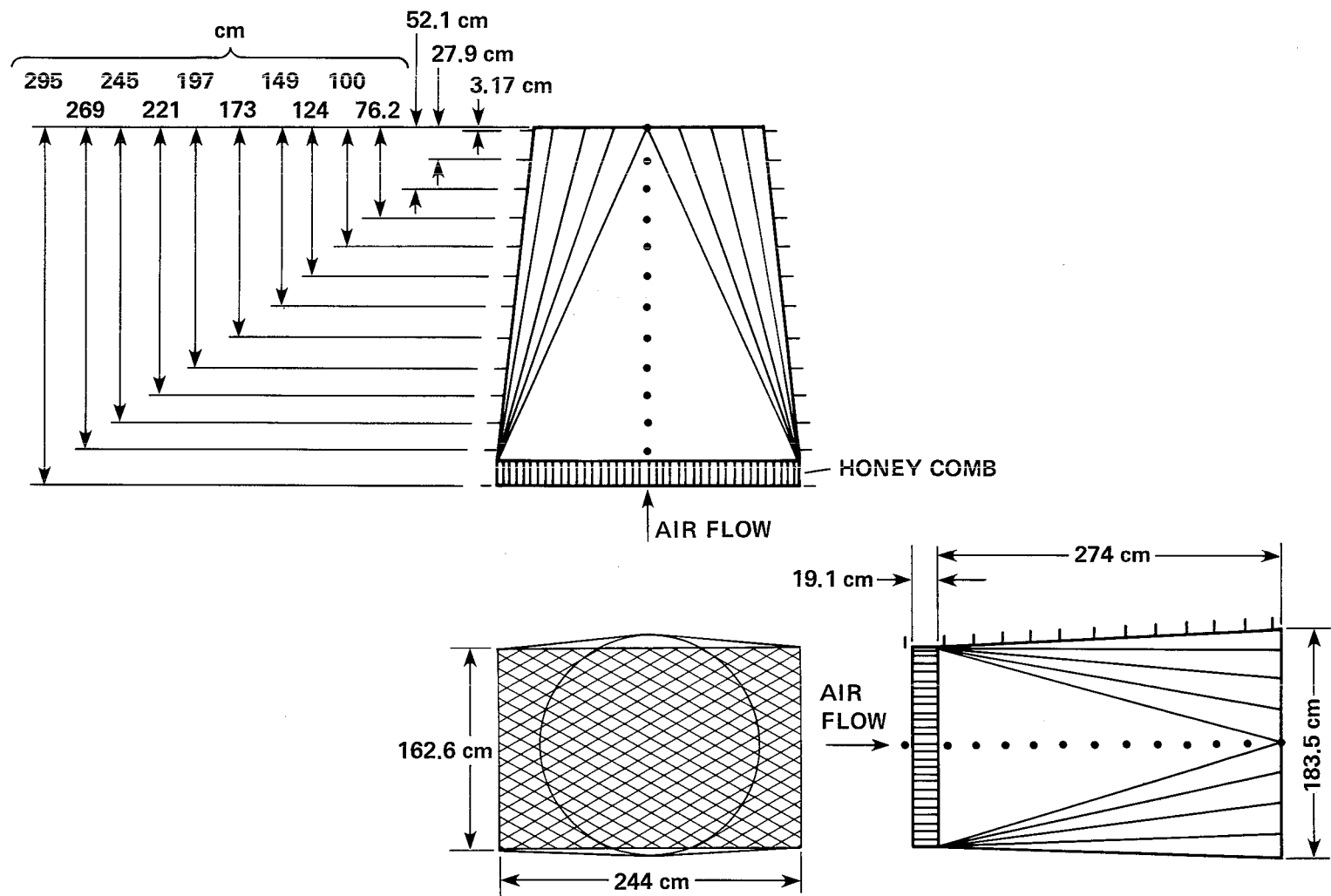


Figure 8.- Transition section and static pressure tap locations.

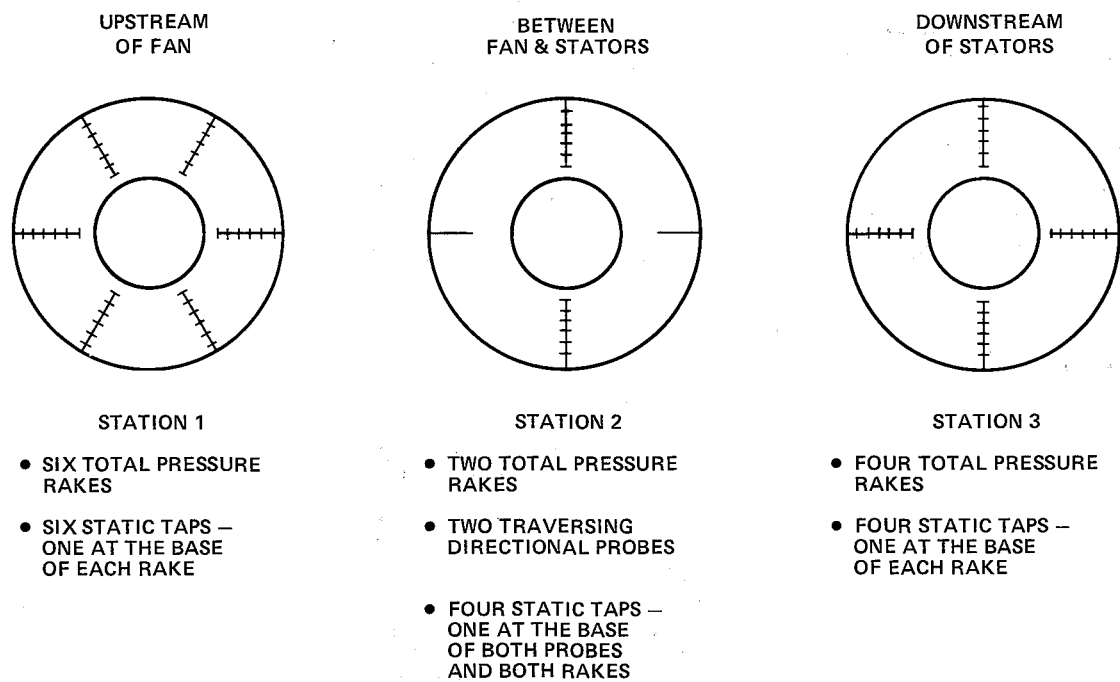


Figure 9.- Fan drive instrumentation.

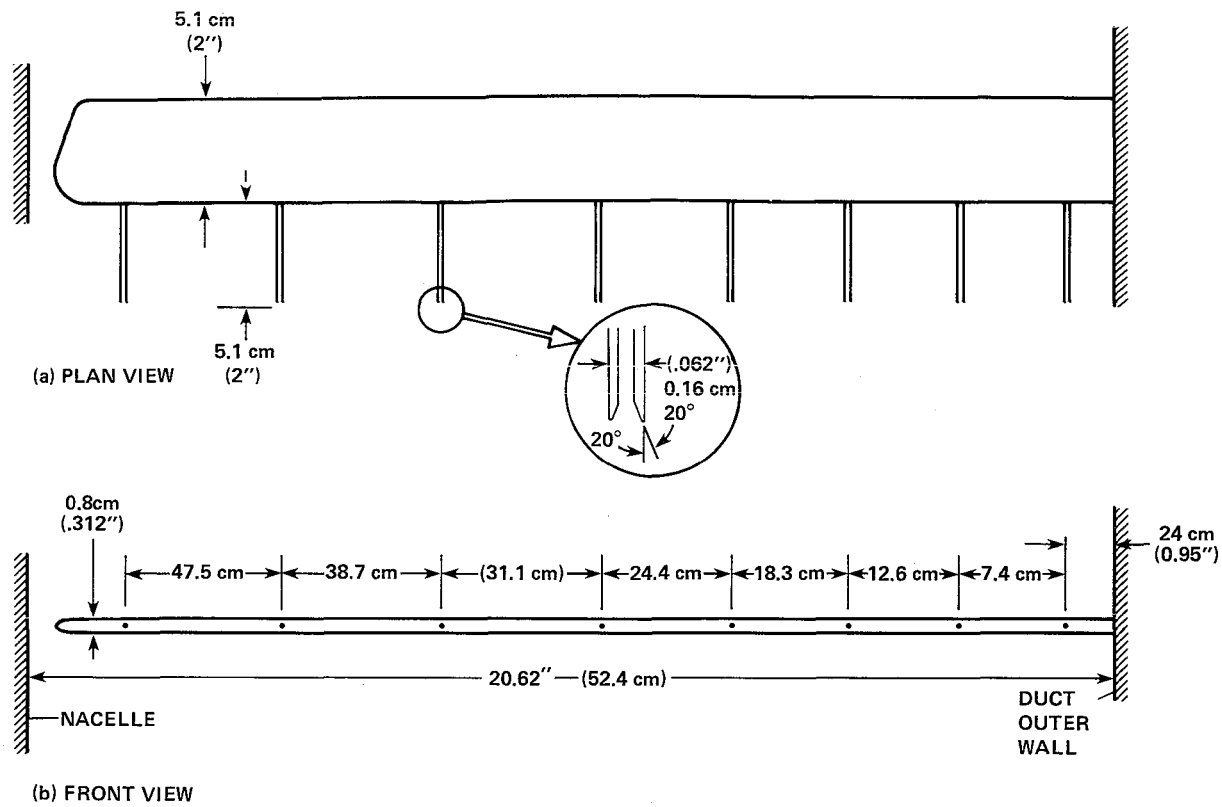


Figure 10.- Total-pressure rake.

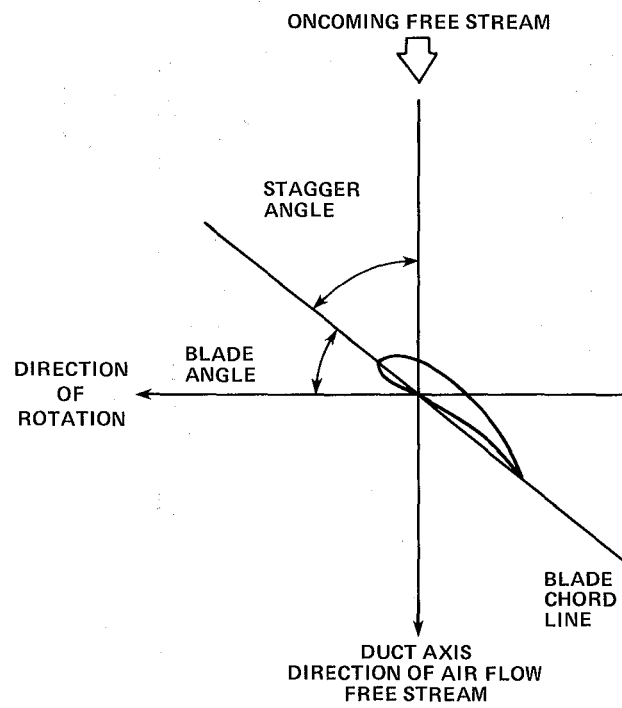


Figure 11.- Blade angle definition.

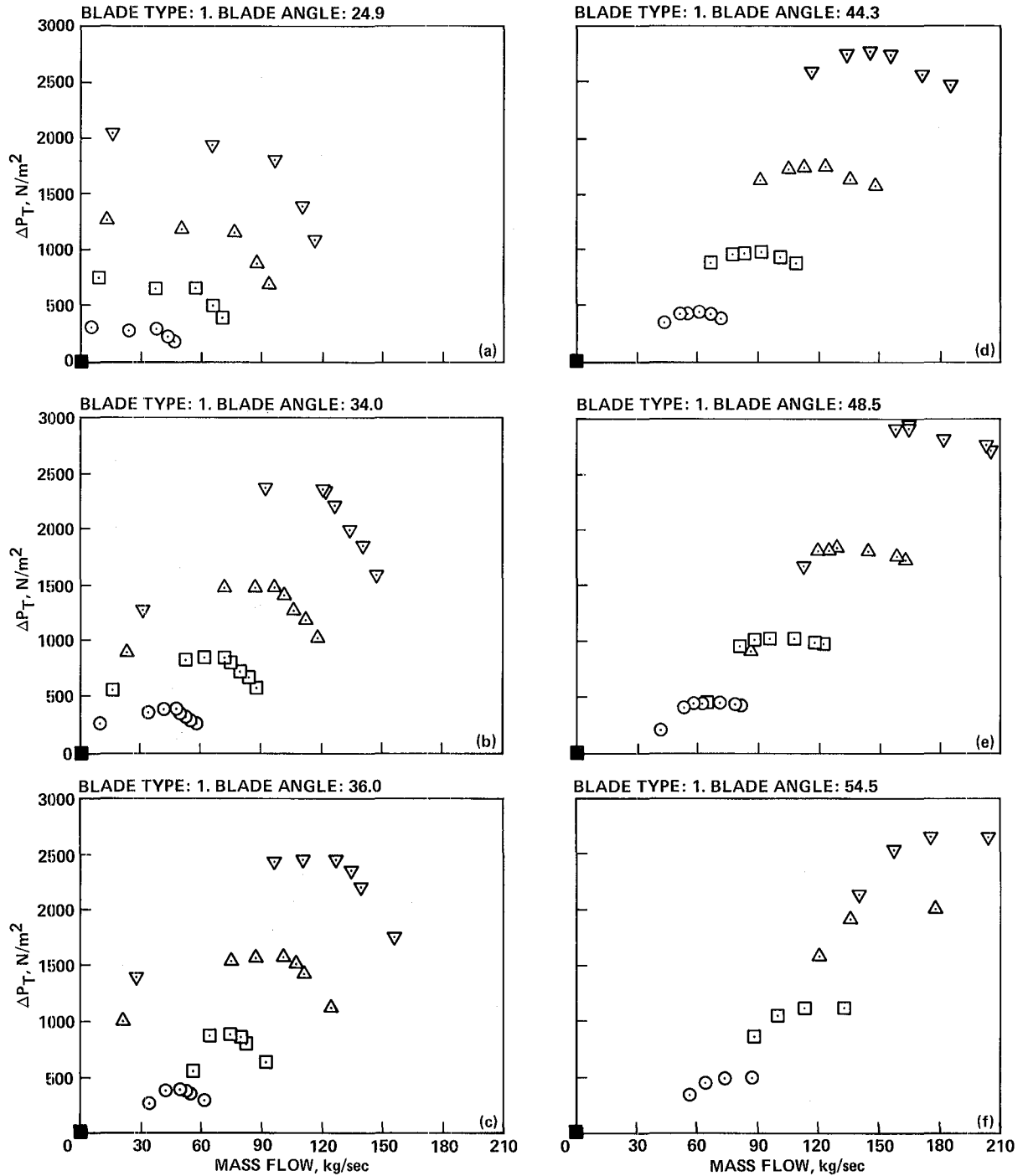


Figure 12.- Total pressure change across fan vs, mass flow (constant blade angle).

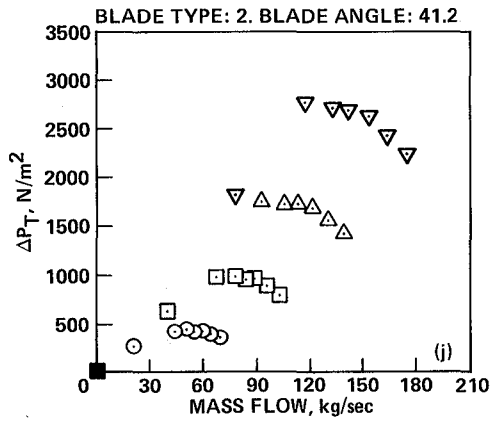
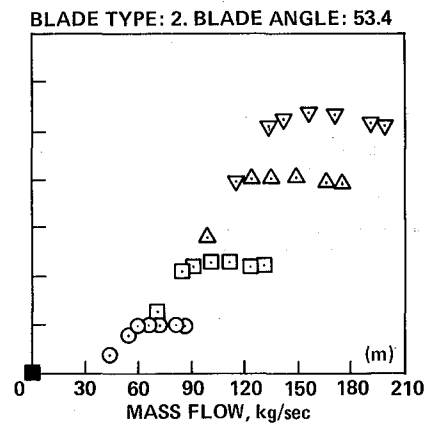
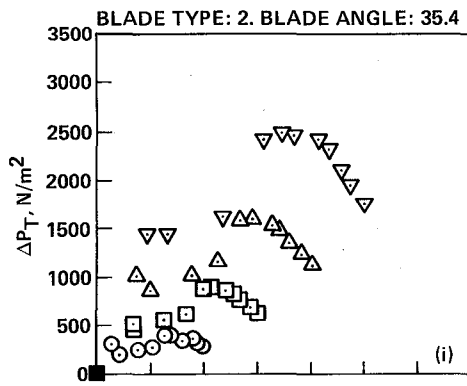
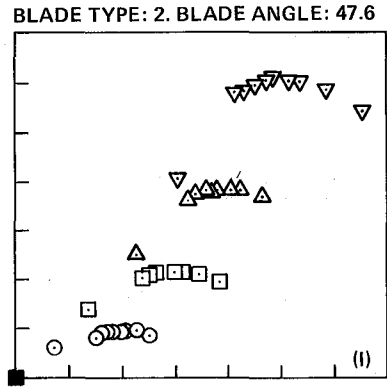
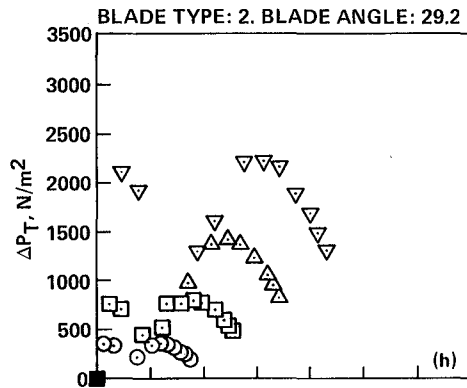
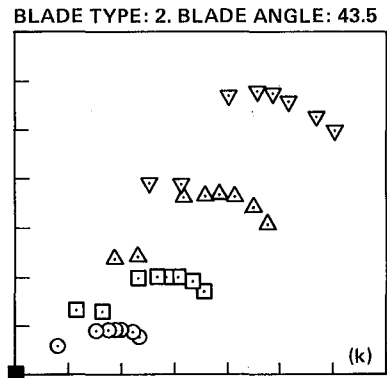
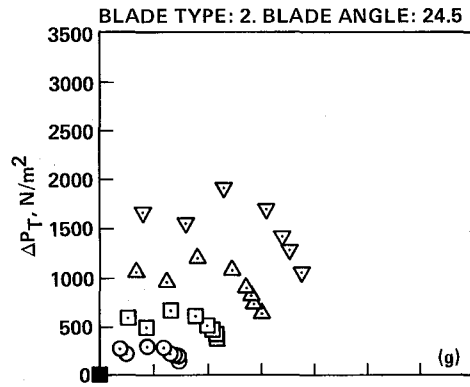


Figure 12.- Concluded.

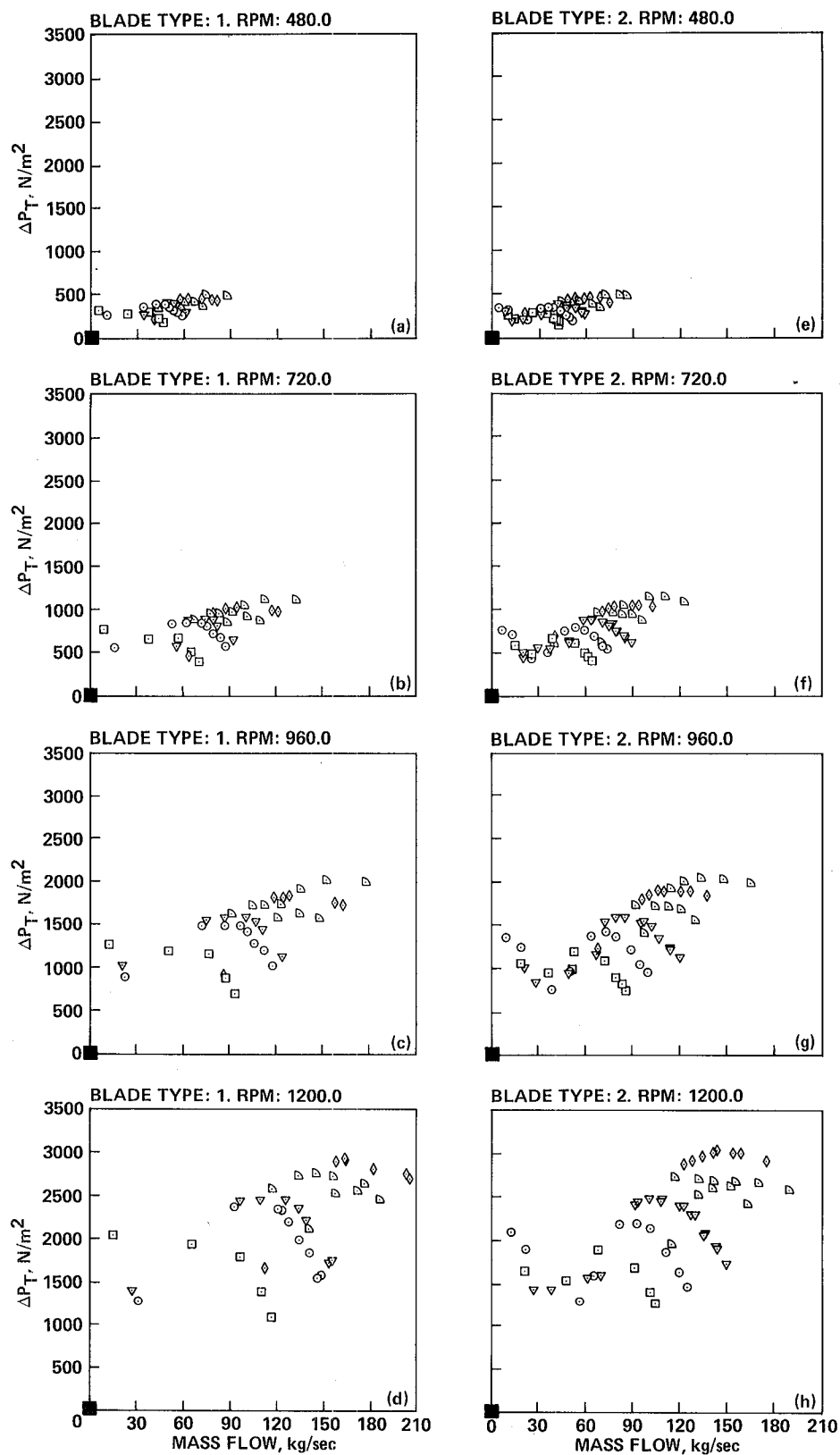


Figure 13.- Total pressure change across fan vs. mass flow (constant rpm).

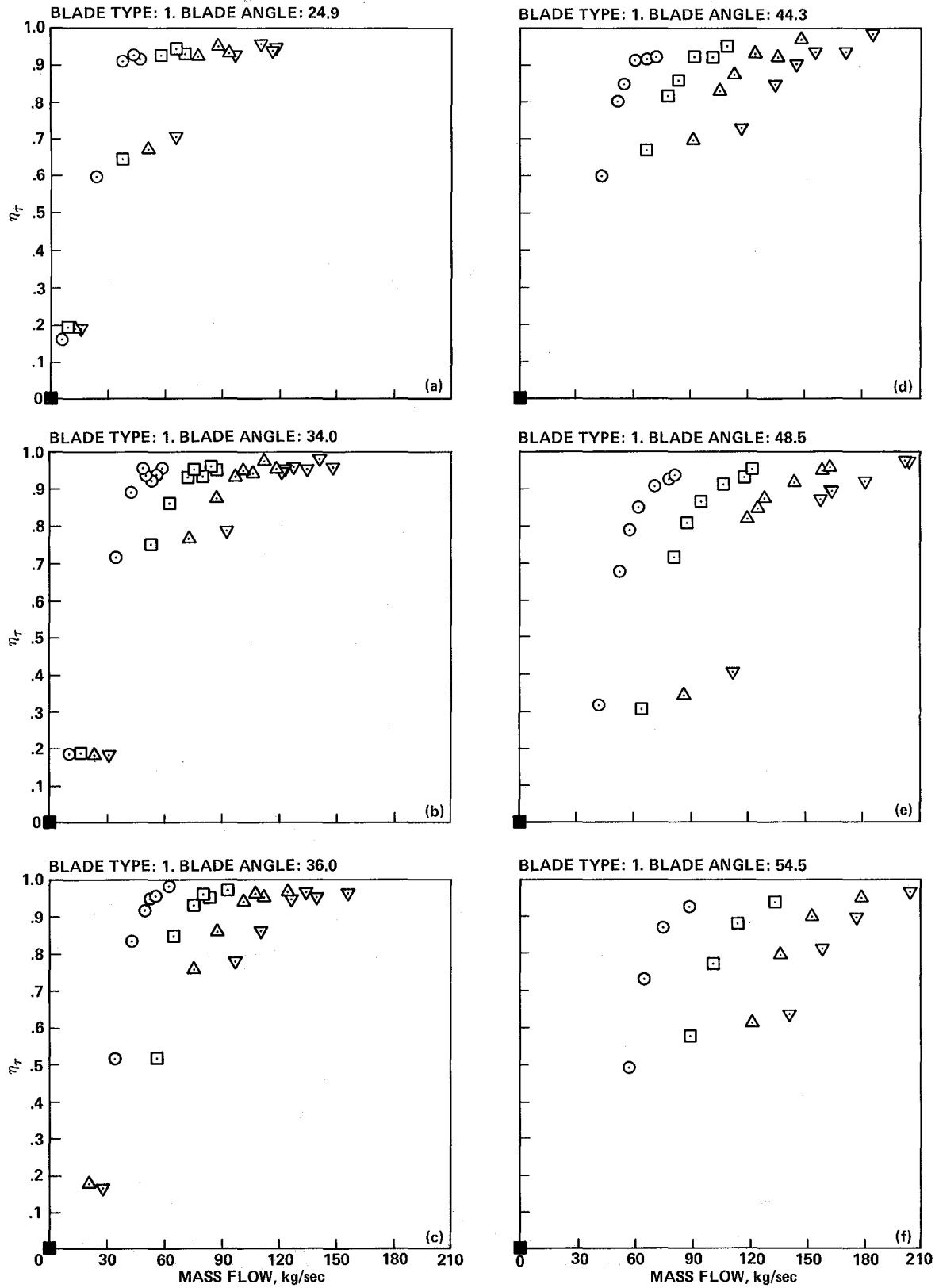


Figure 14.- Fan efficiency vs. mass flow.

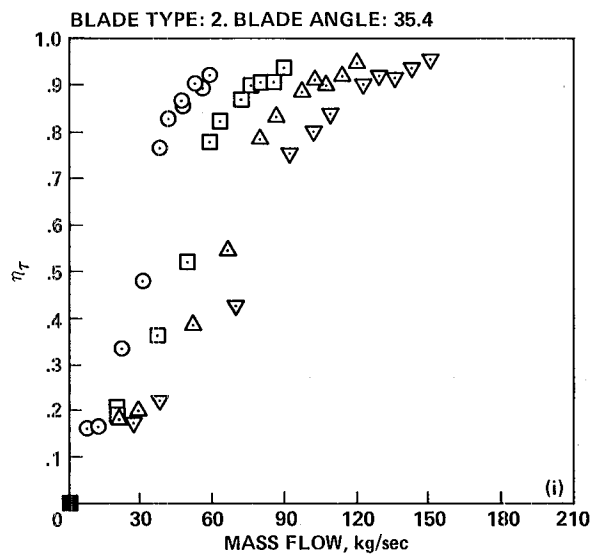
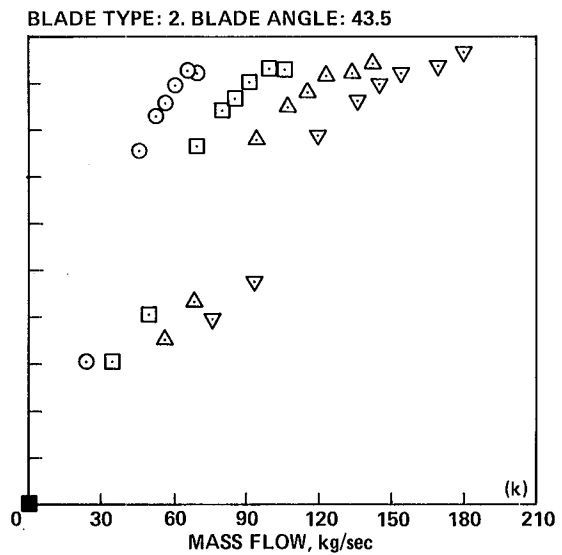
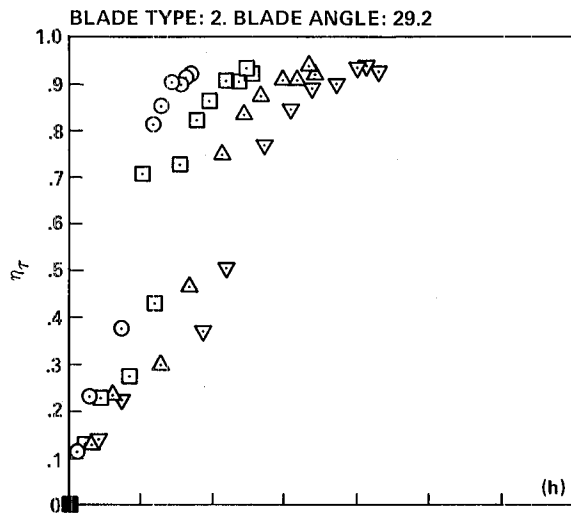
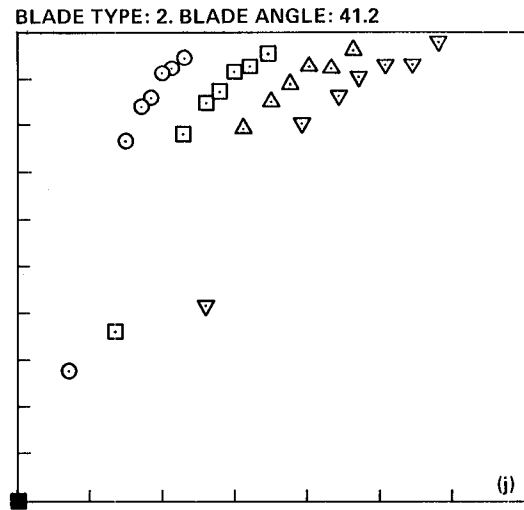
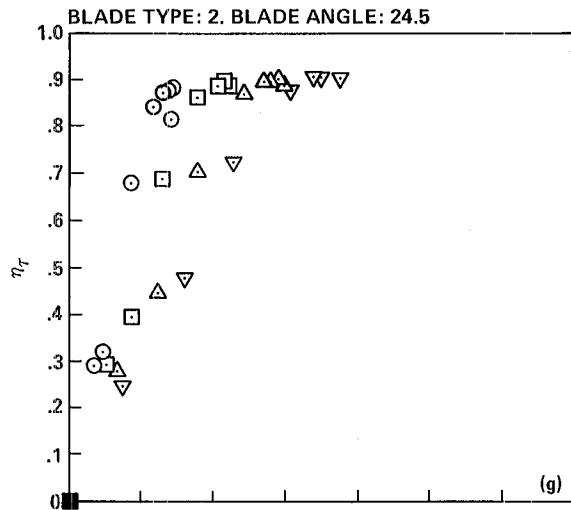


Figure 14.- Continued.

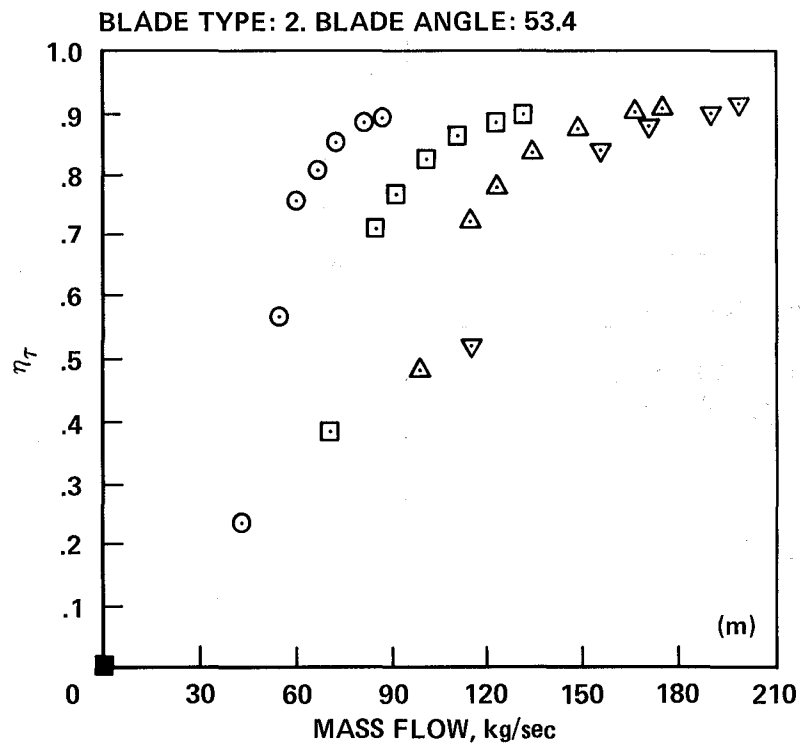
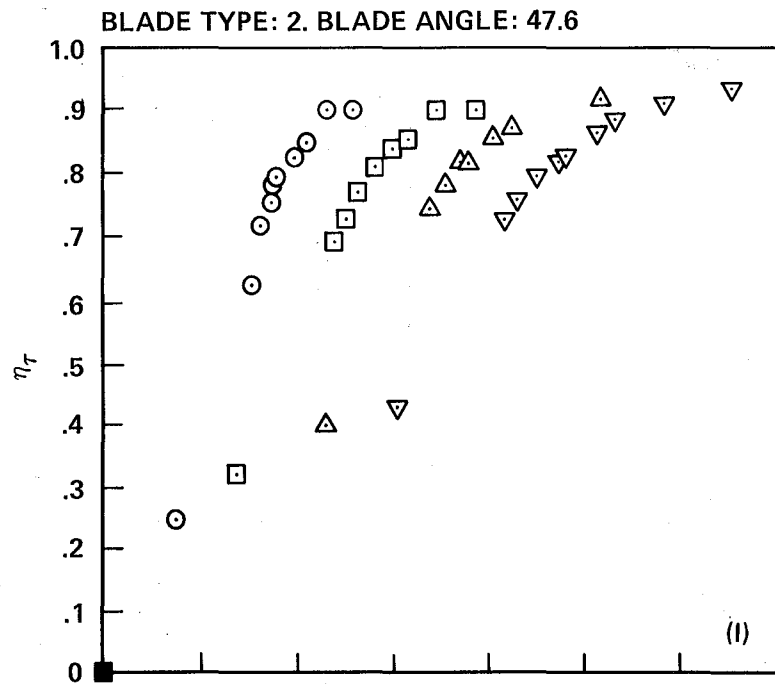


Figure 14.- Concluded.

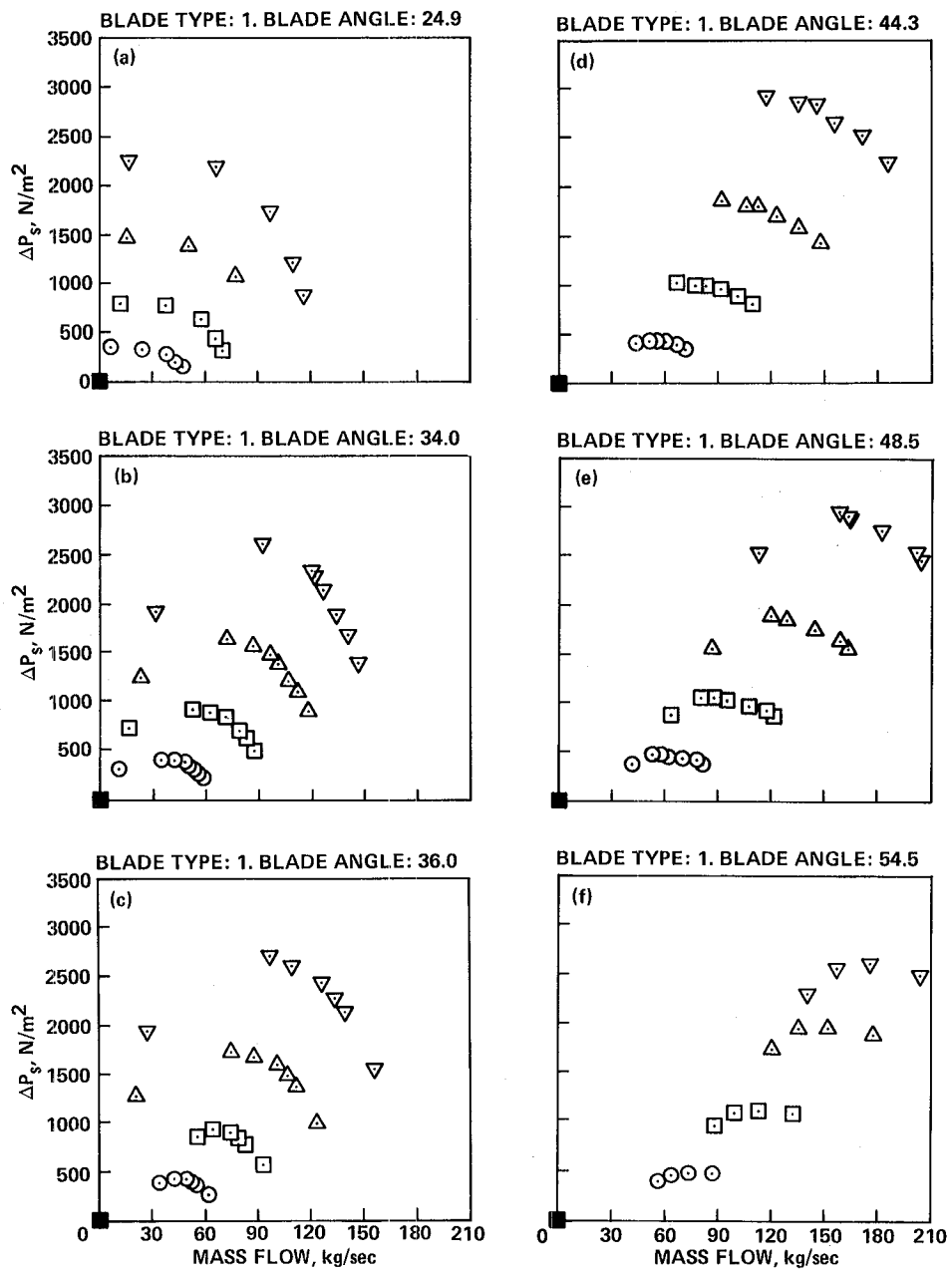


Figure 15.- Static pressure change across fan vs. mass flow.

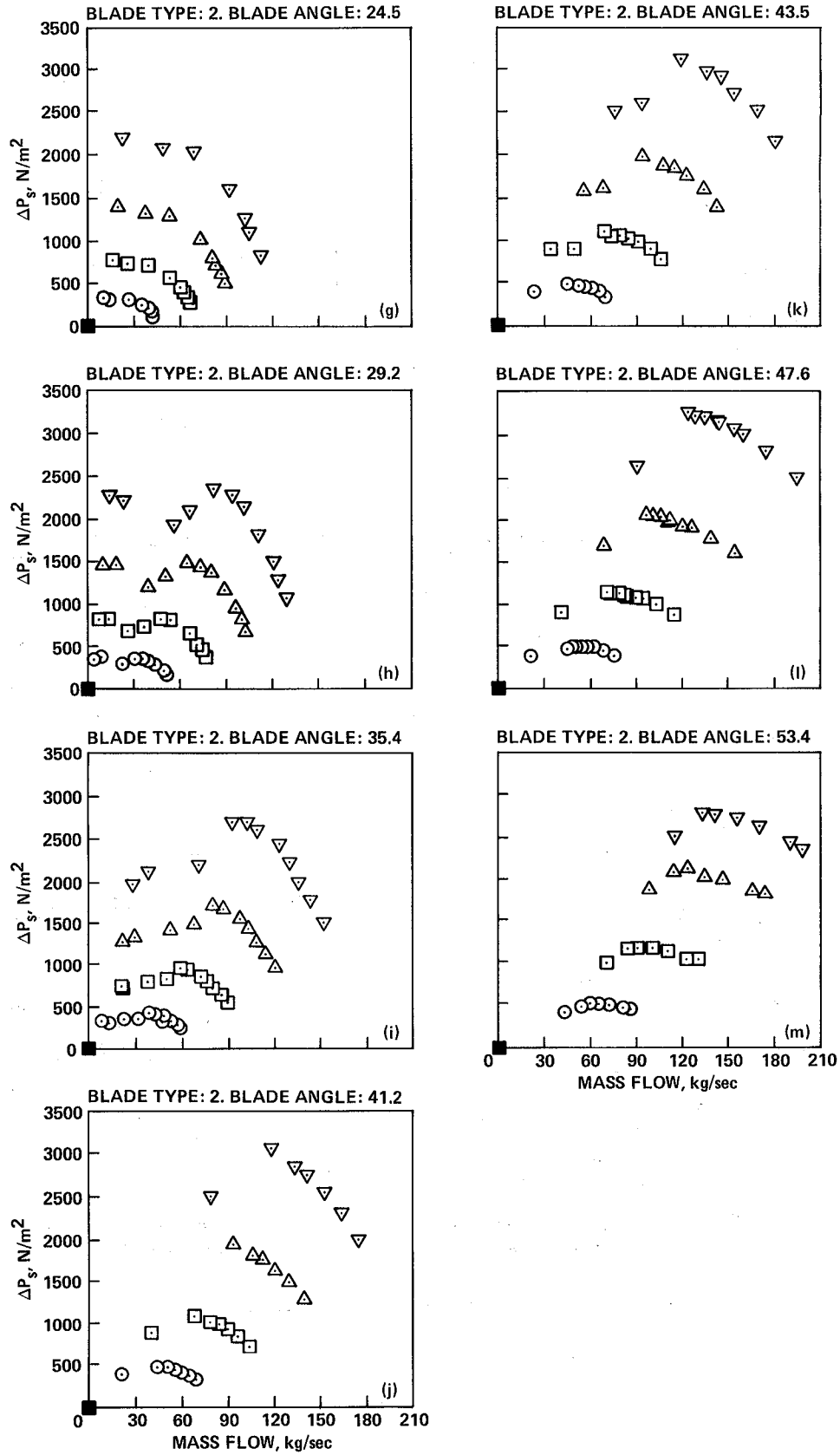


Figure 15.- Concluded.

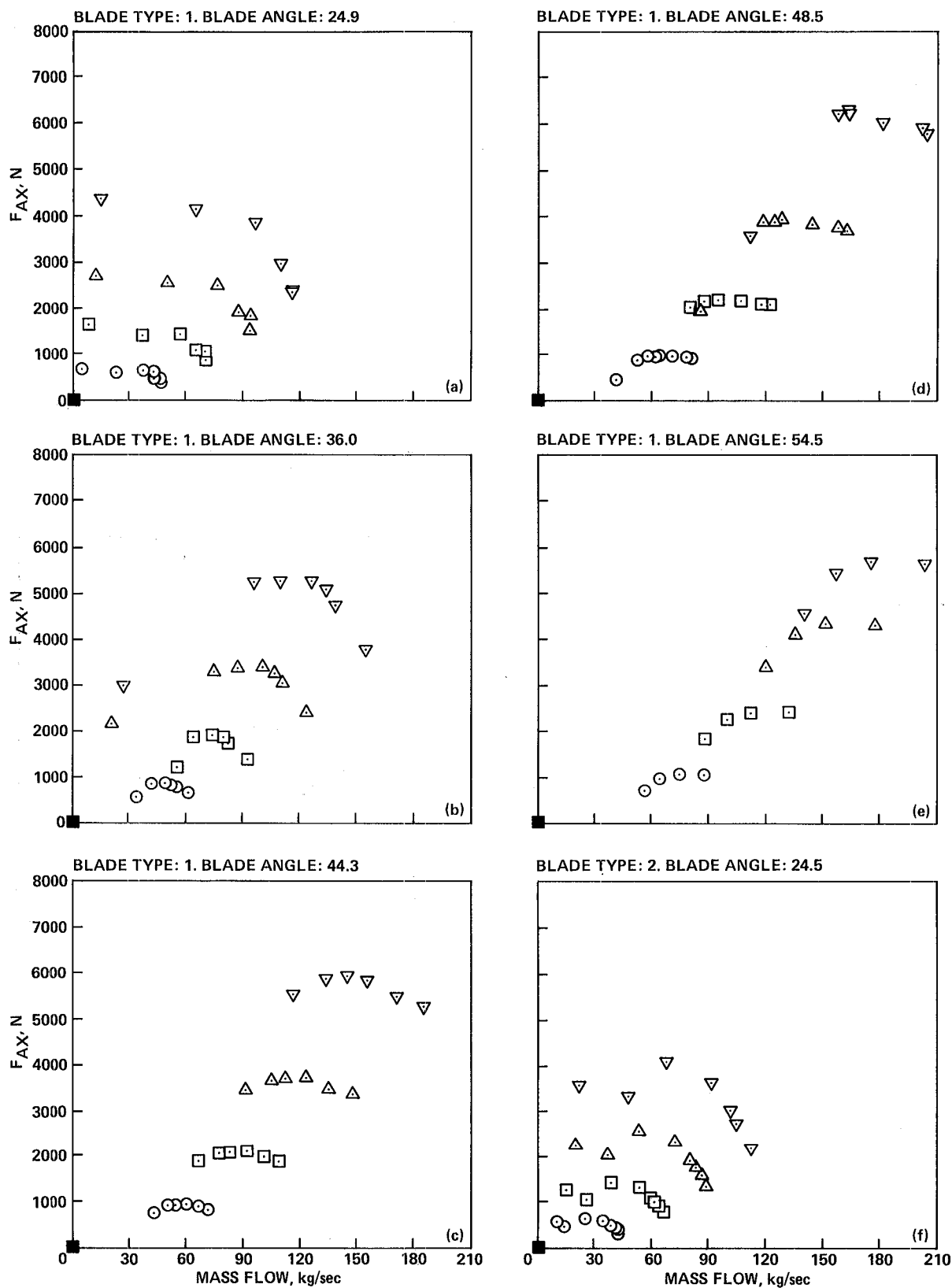


Figure 16.- Fan thrust vs. mass flow.

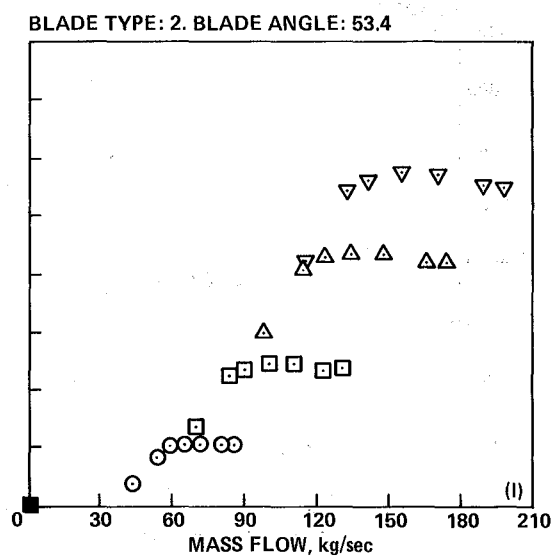
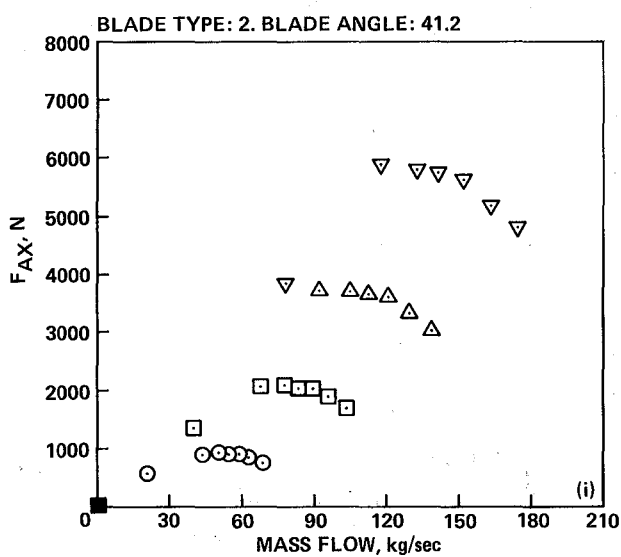
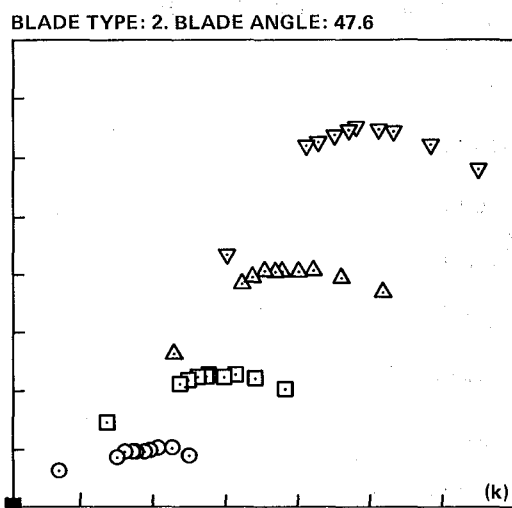
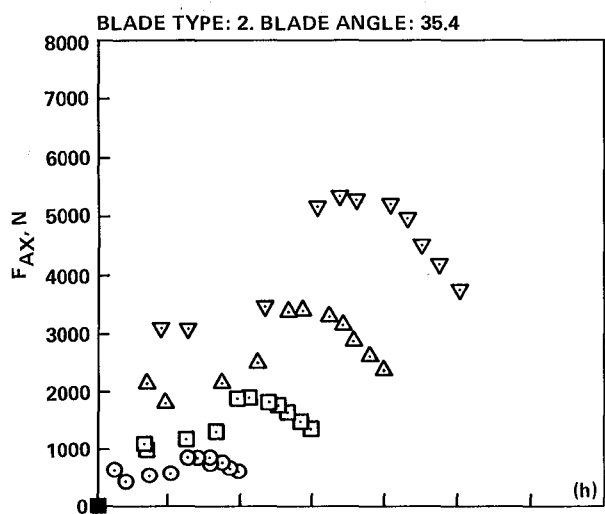
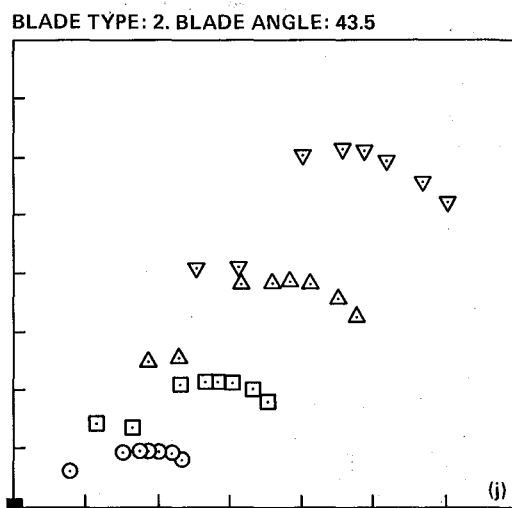
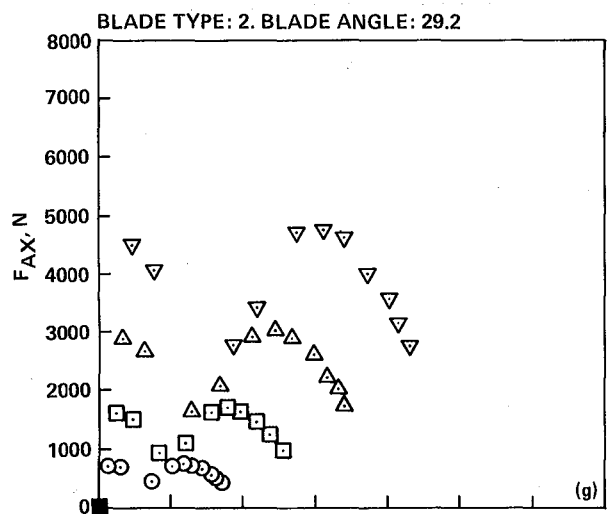


Figure 16.- Concluded.

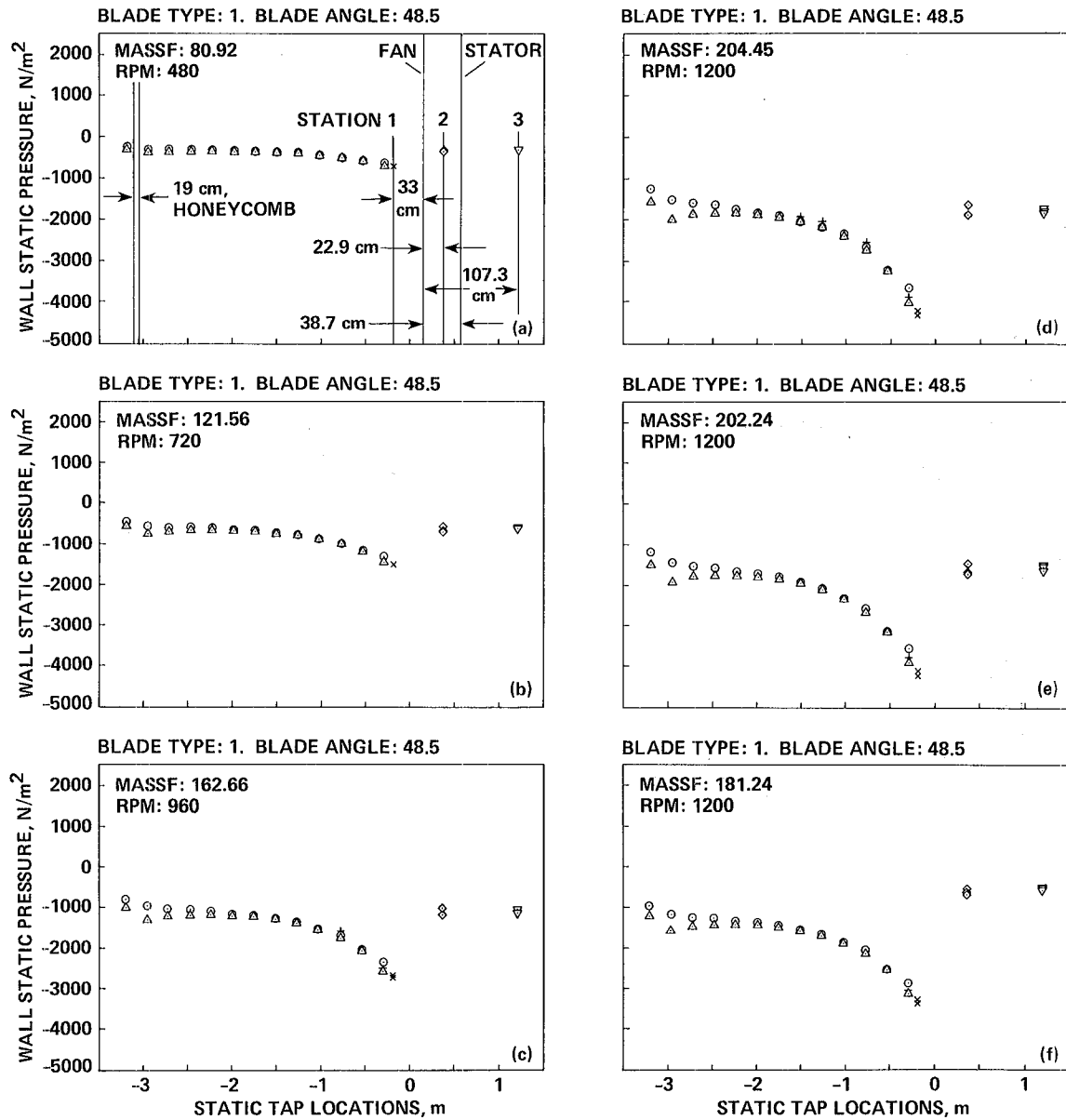


Figure 17.- Wall static pressures vs. axial distance.

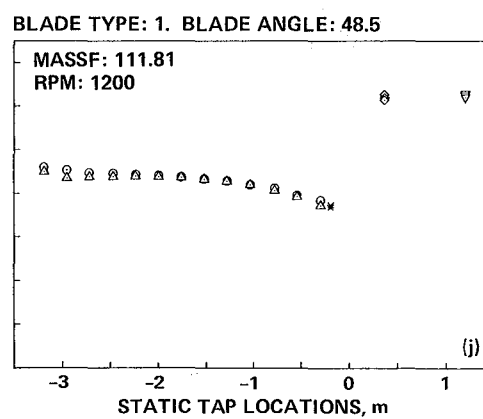
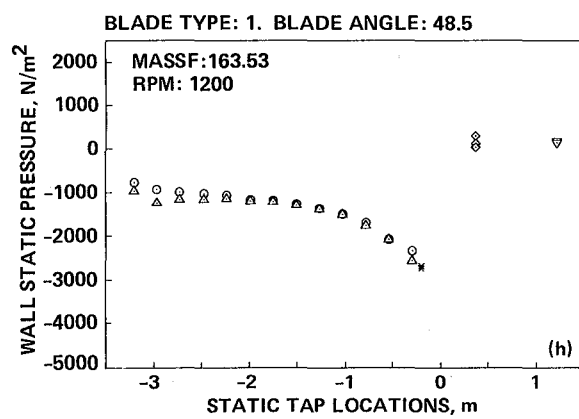
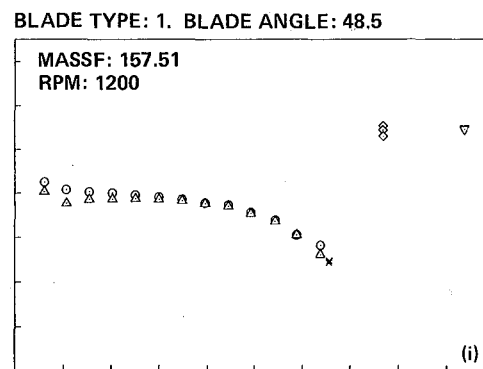
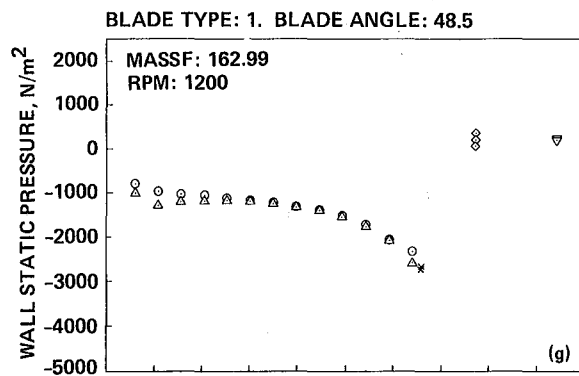


Figure 17.- Continued.

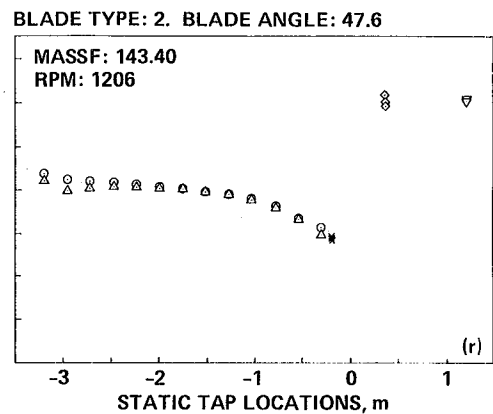
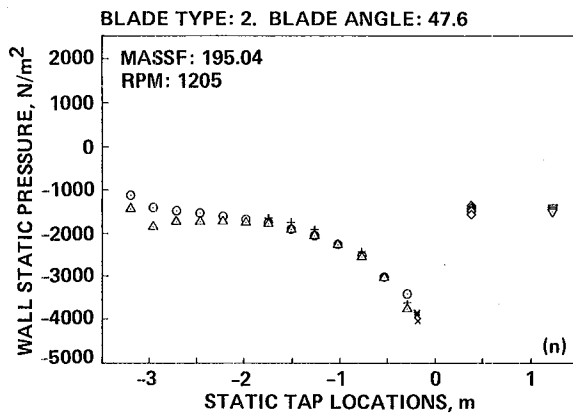
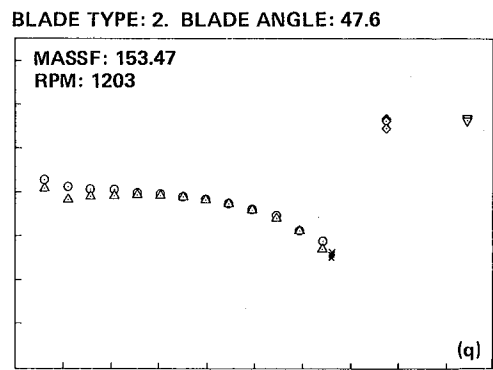
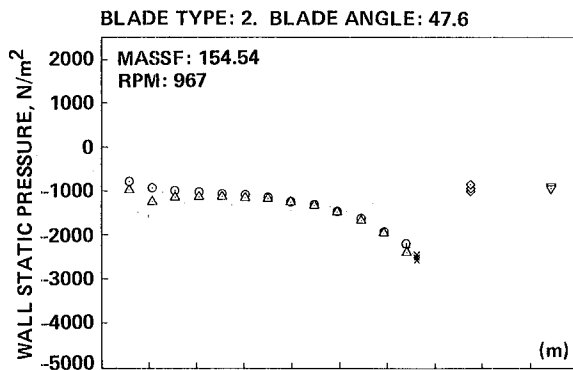
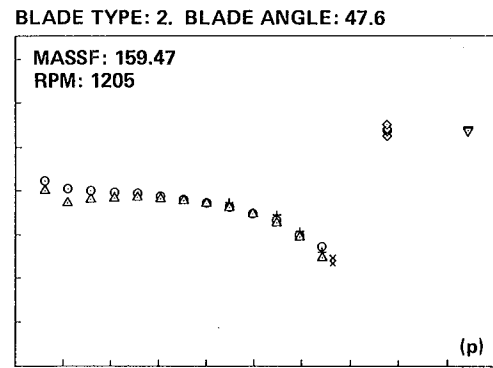
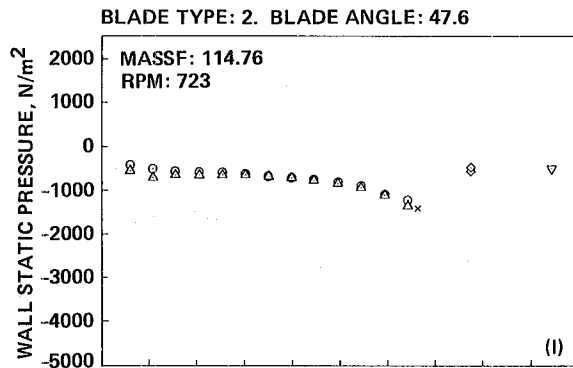
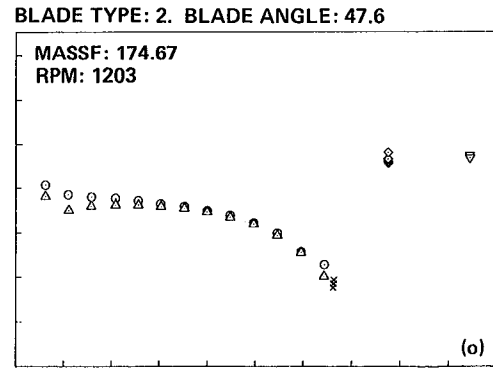
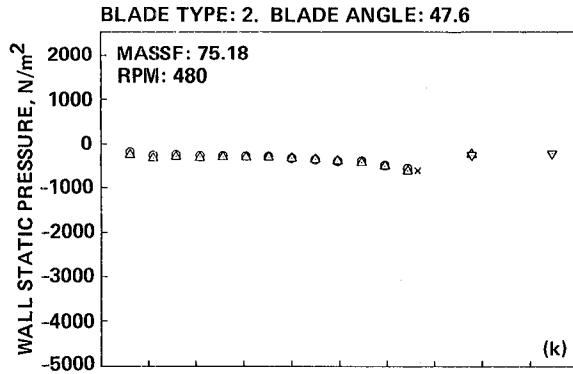


Figure 17.- Continued.

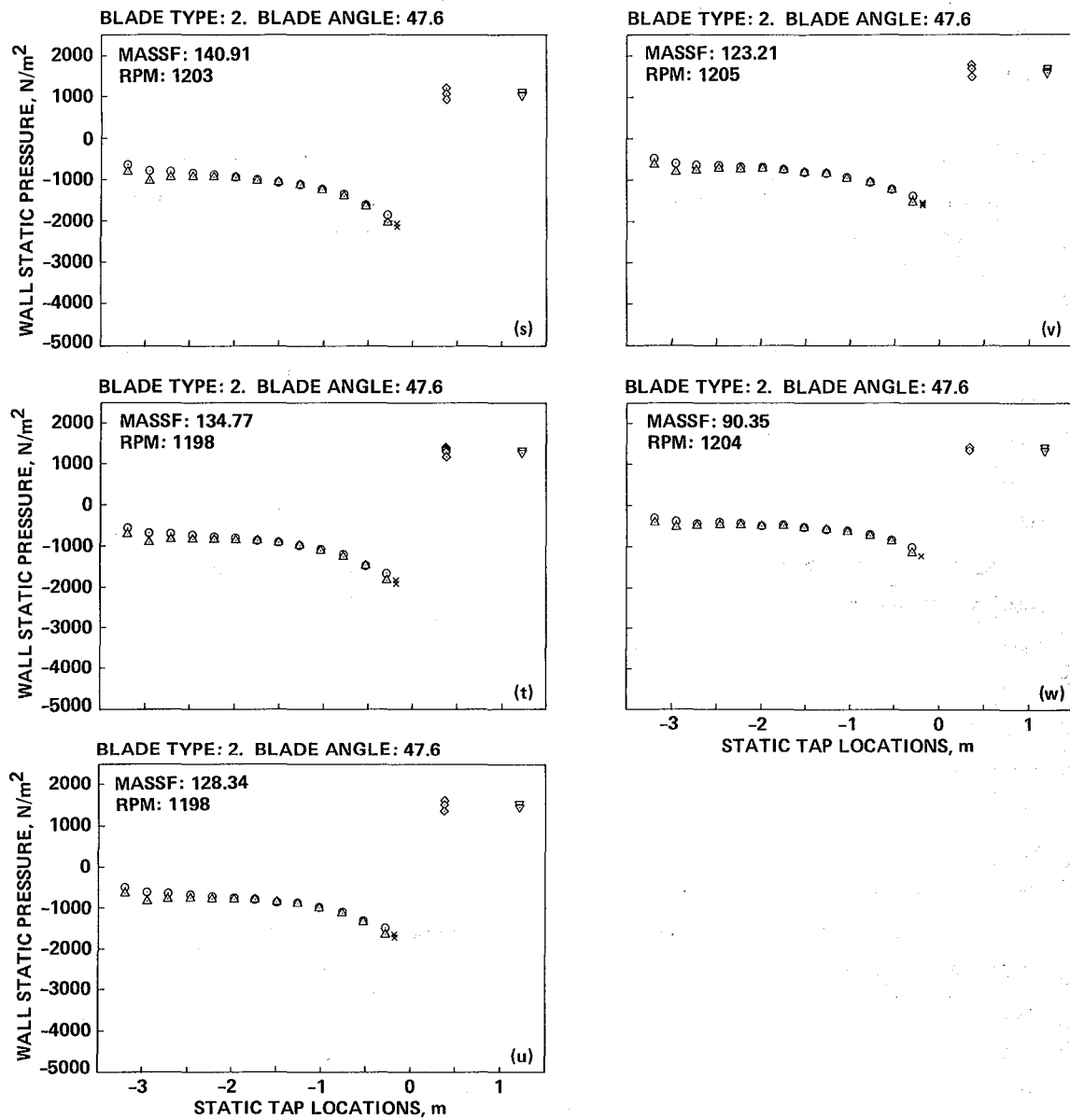


Figure 17.- Concluded.

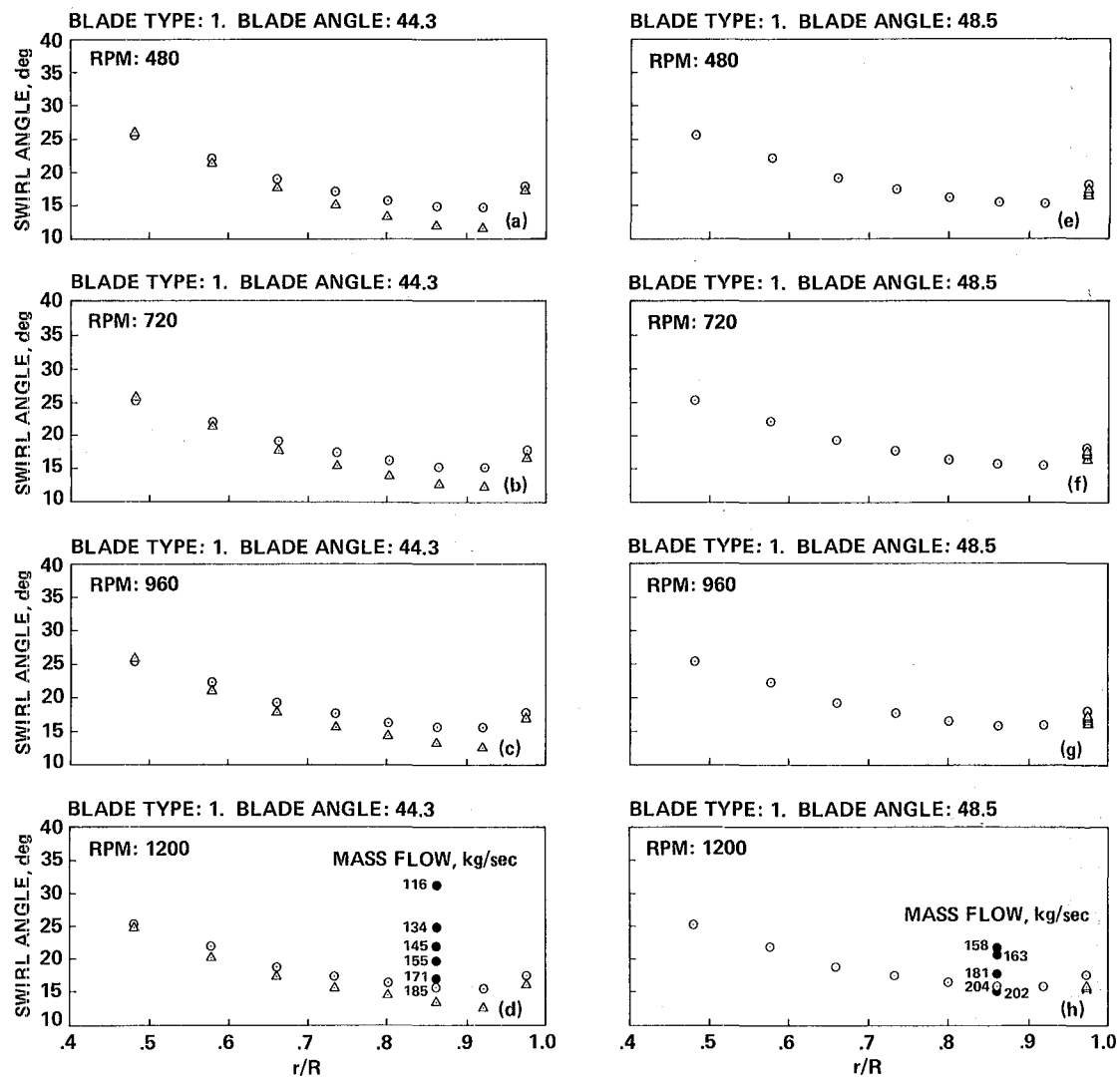


Figure 18.- Swirl angle vs. radial distance.

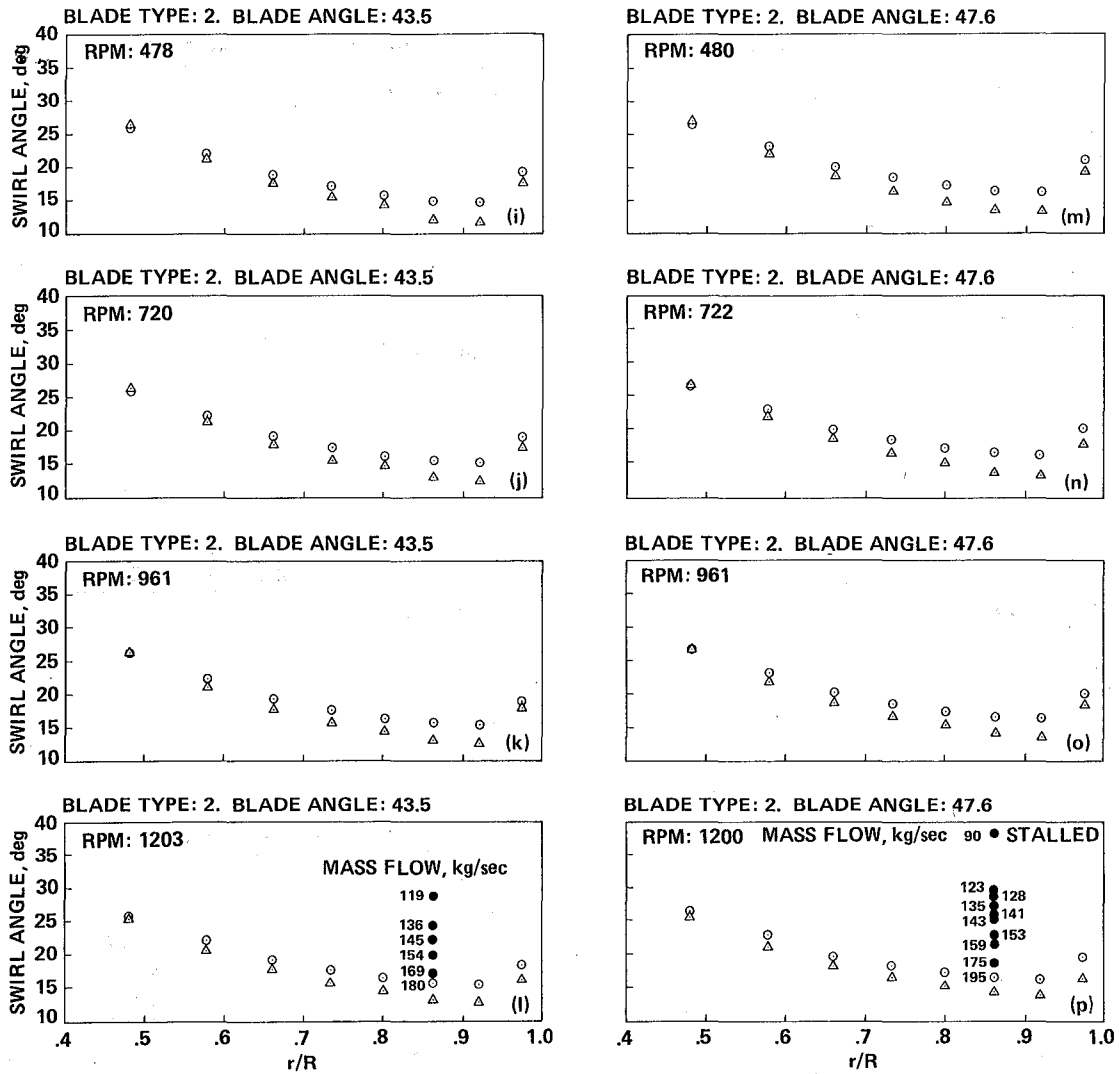


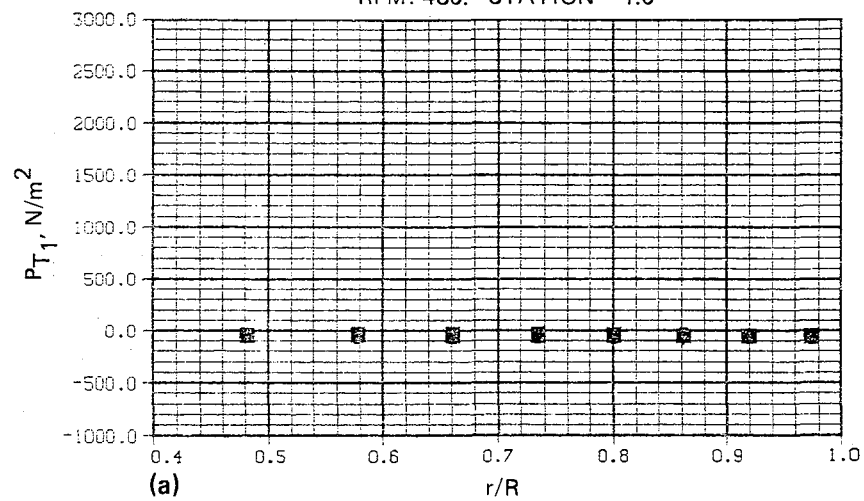
Figure 18.- Concluded.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

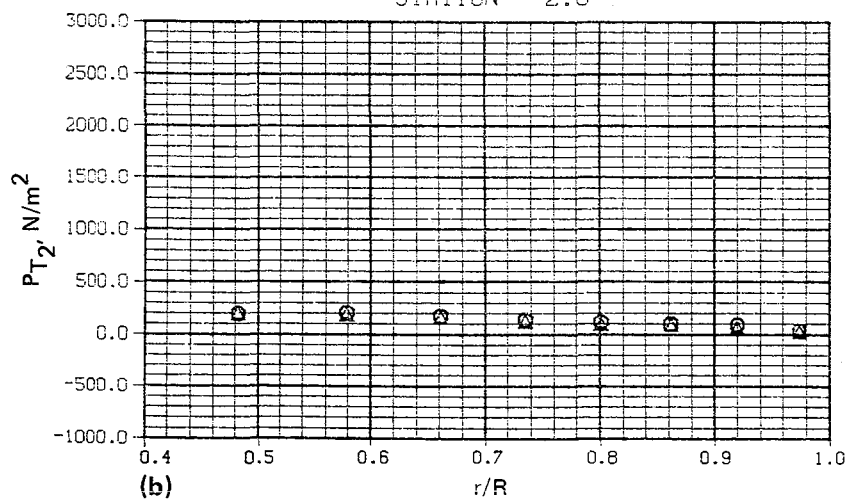
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 14. MASS FLOW: 46.62, slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

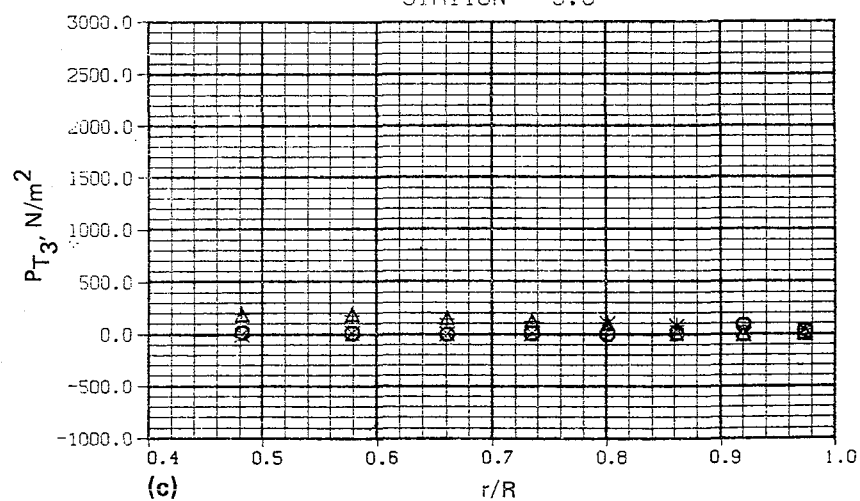


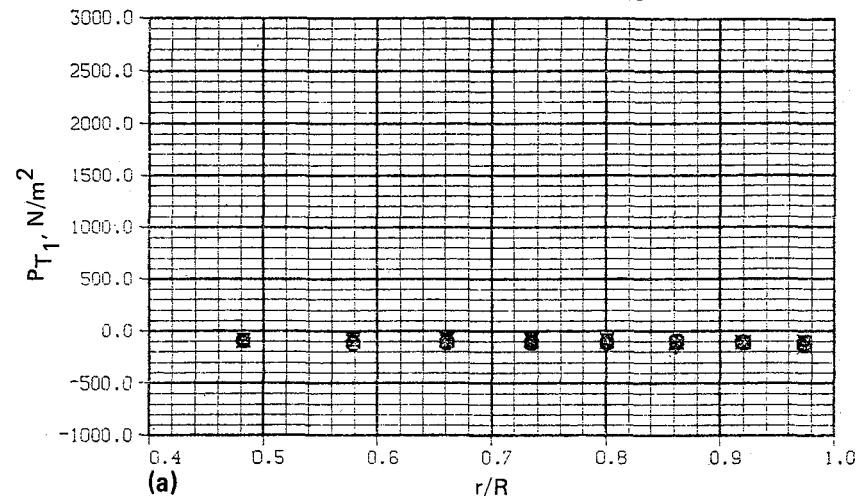
Figure 19.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

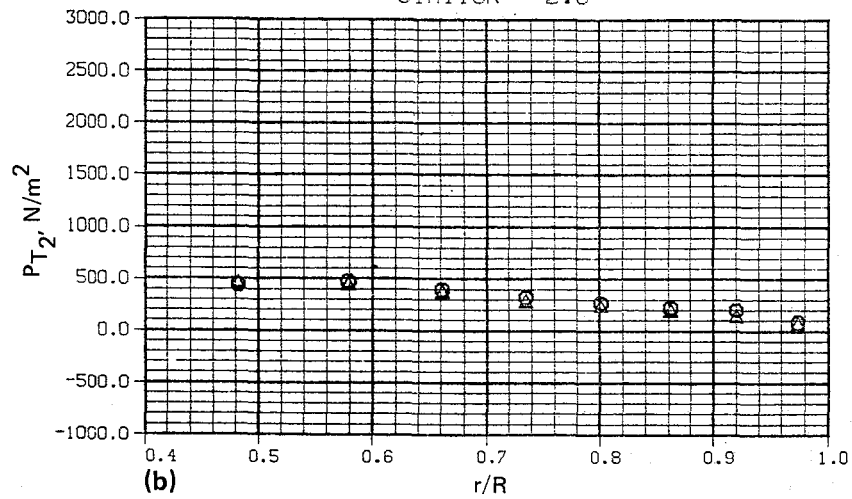
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 14. MASS FLOW: 70.25 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

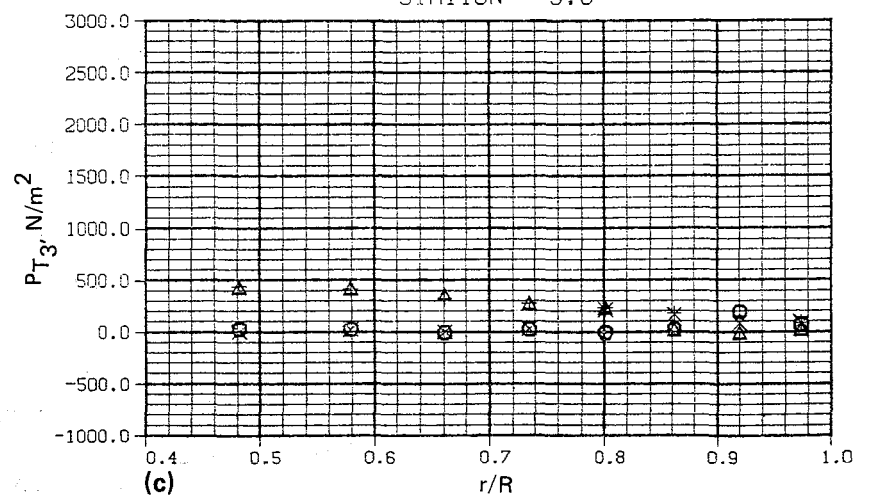


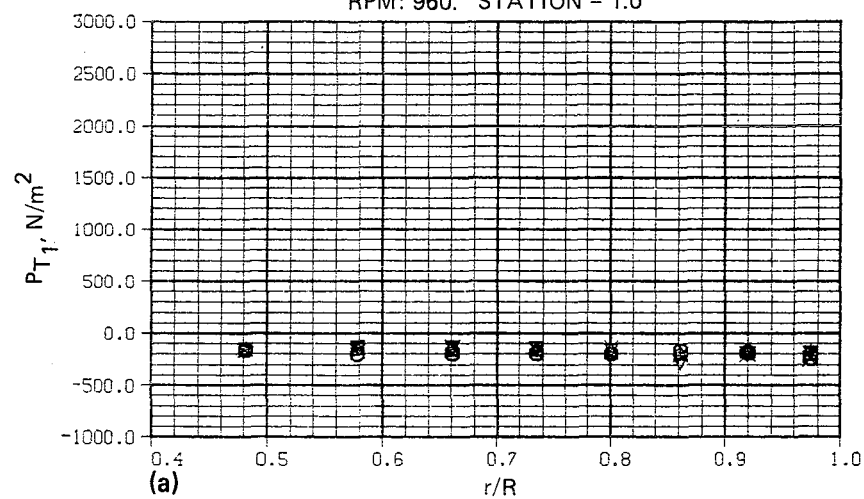
Figure 20.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

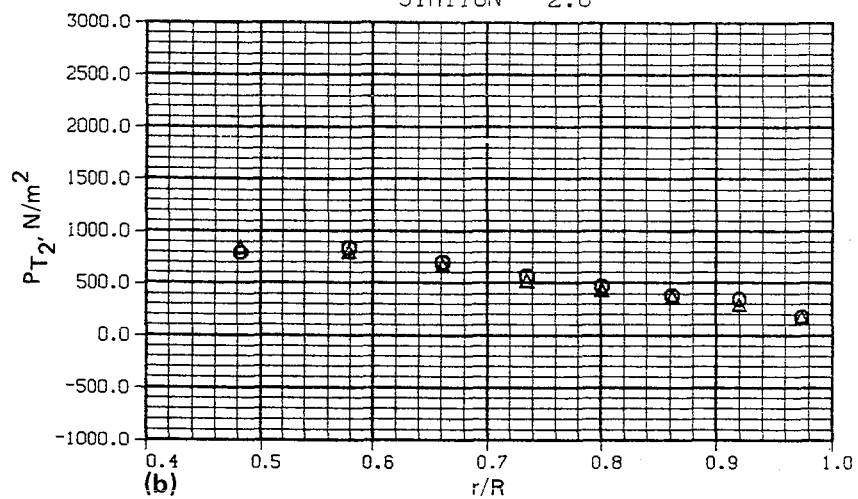
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 14. MASS FLOW: 93.58 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

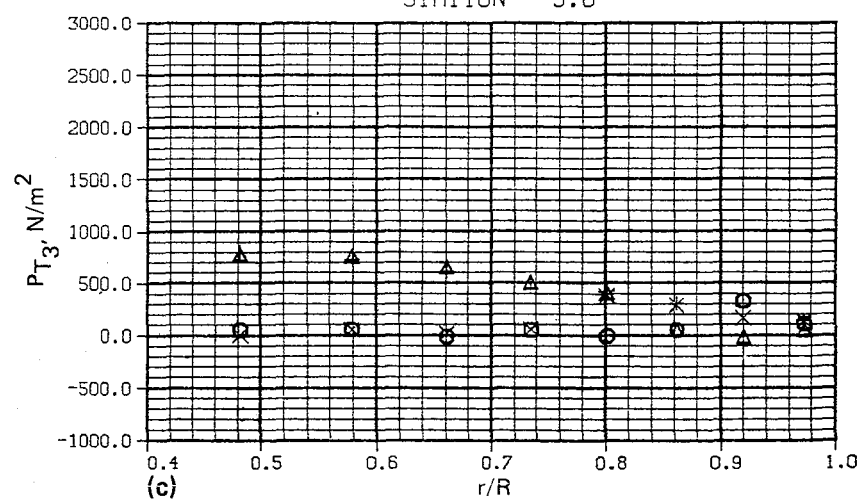


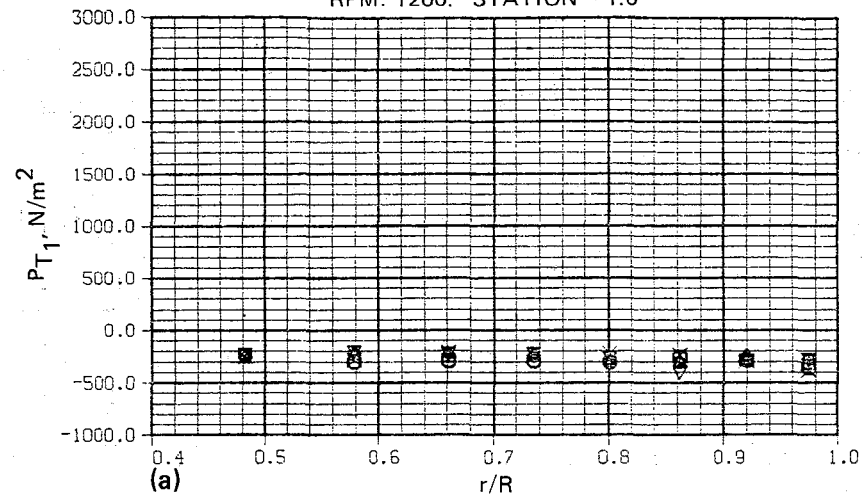
Figure 21.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

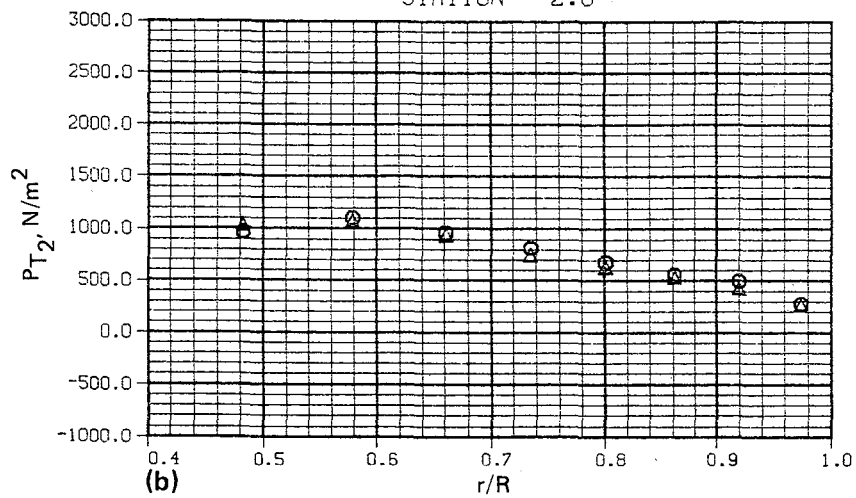
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 11. MASS FLOW: 116.16 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

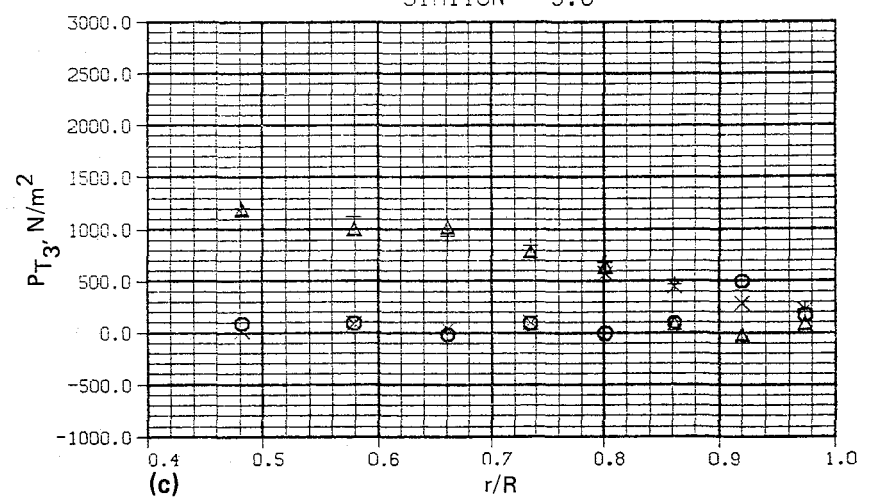


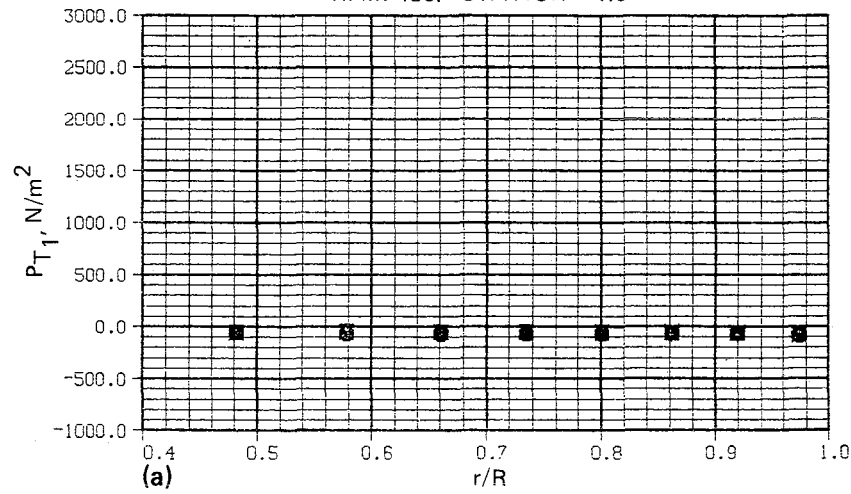
Figure 22.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

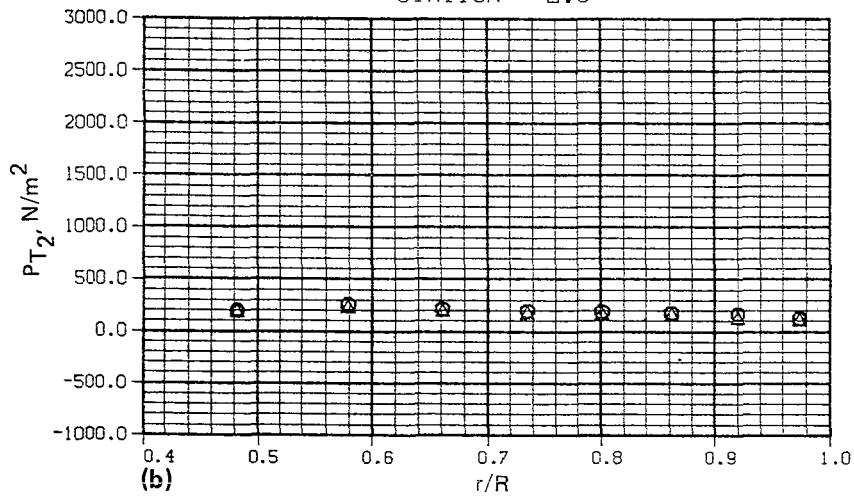
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 50. MASS FLOW: 58.22 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

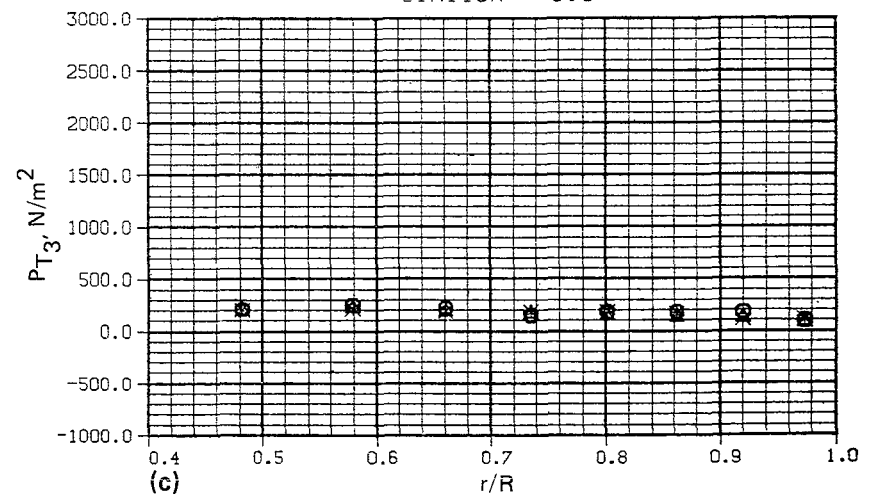


Figure 23.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 34.0
 RUN NO: 51. MASS FLOW: 87.73 slugs/sec
 RPM: 720. STATION = 1.0

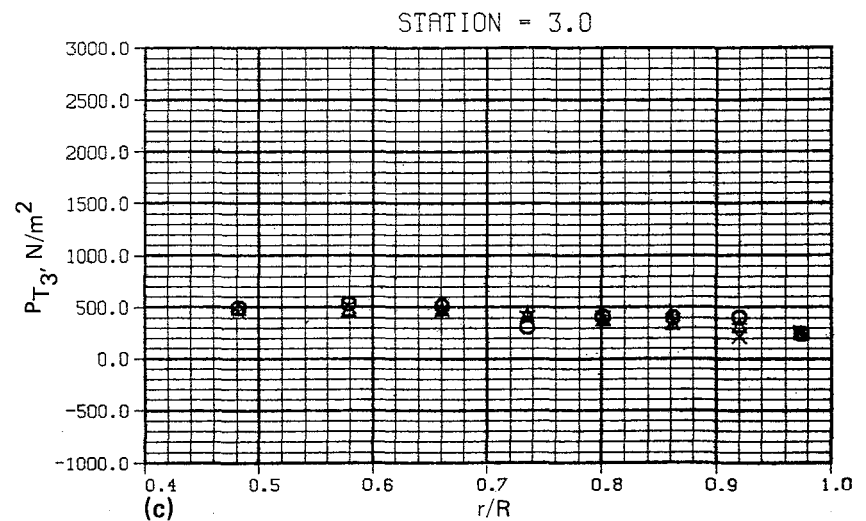
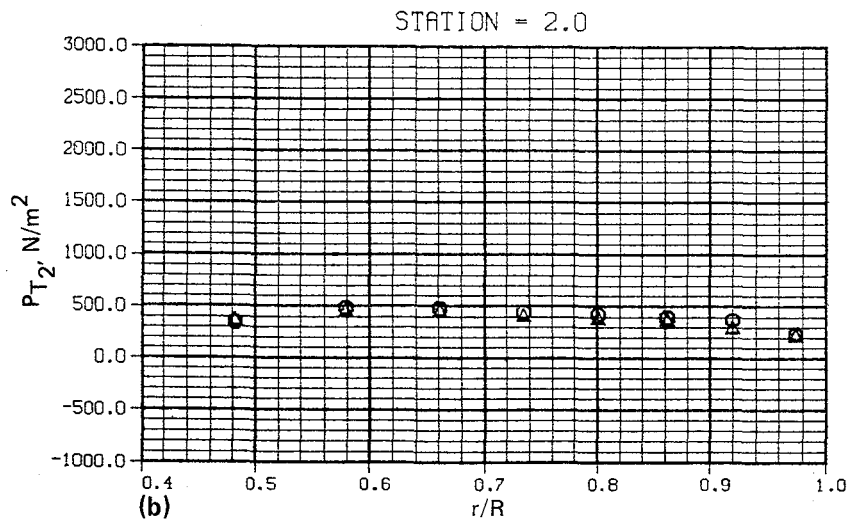
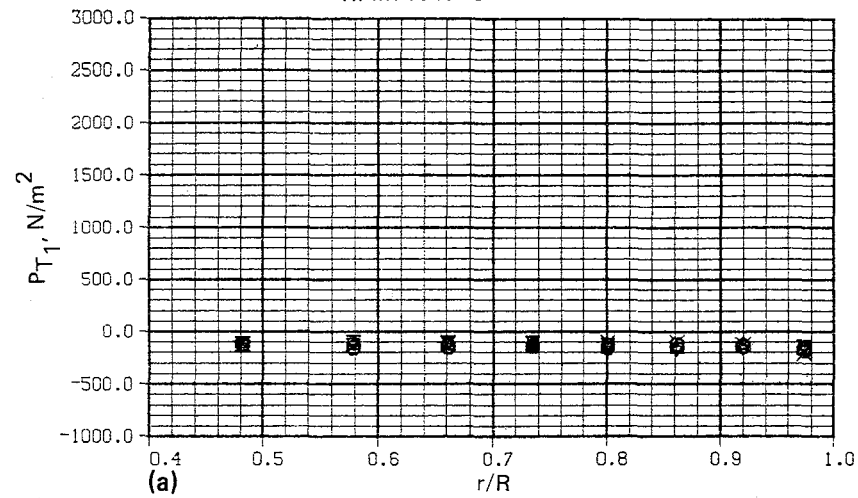


Figure 24.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 52. MASS FLOW: 117.92 slugs/sec

RPM: 960. STATION = 1.0

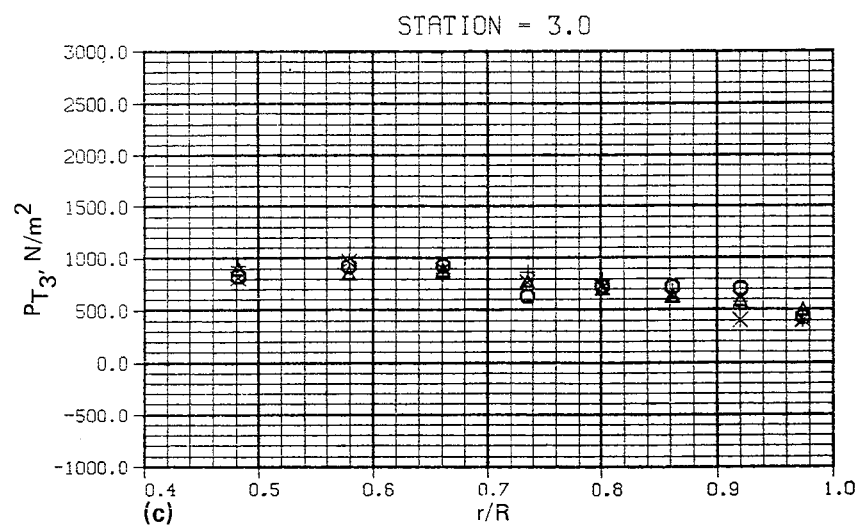
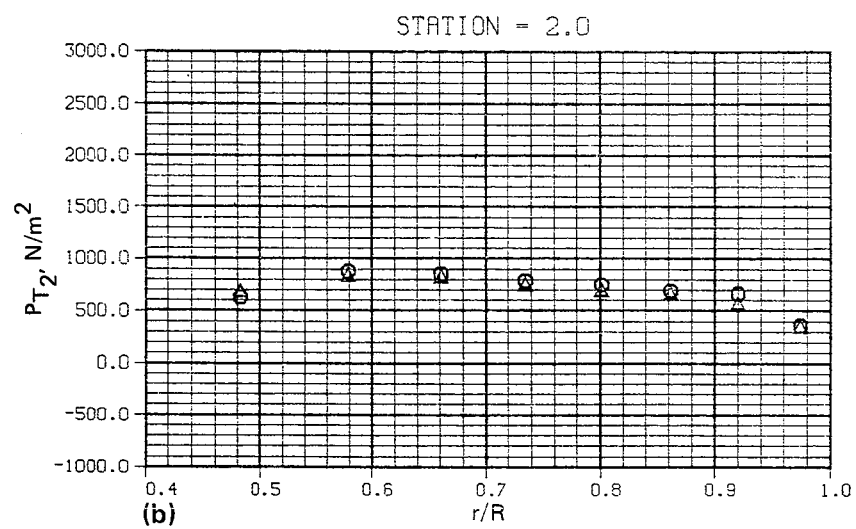
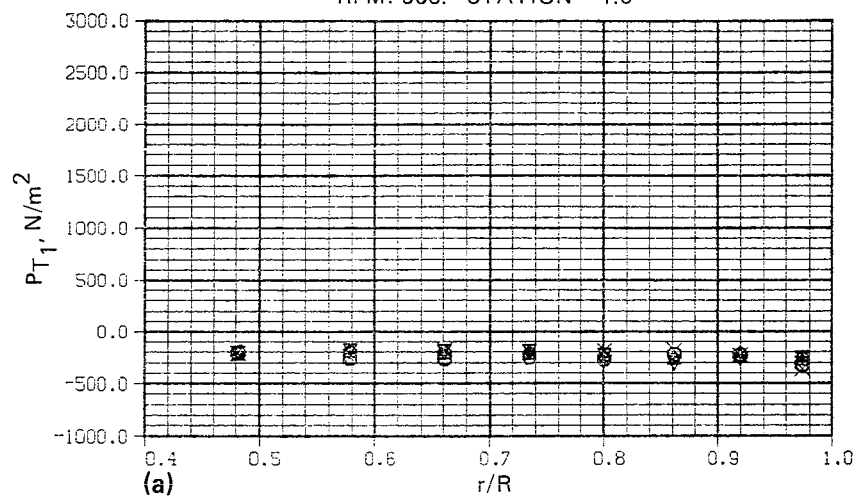


Figure 25.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 53. MASS FLOW: 147.48 slugs/sec

RPM: 1200. STATION = 1.0

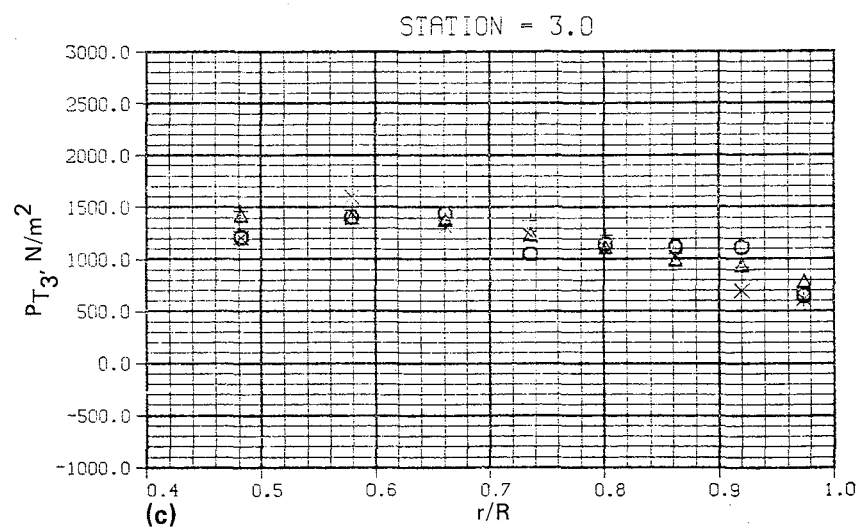
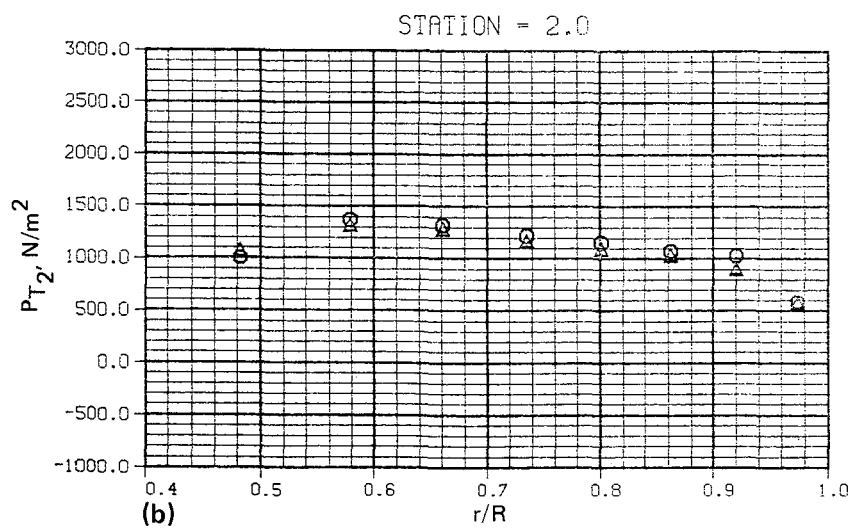
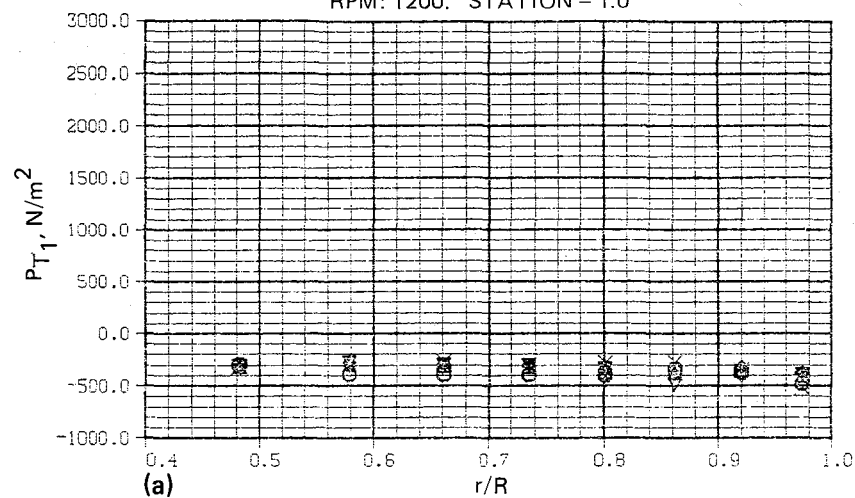


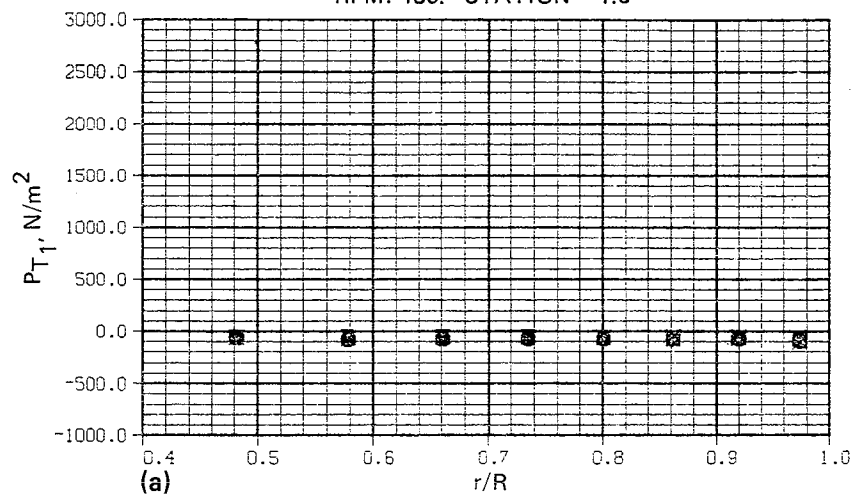
Figure 26.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

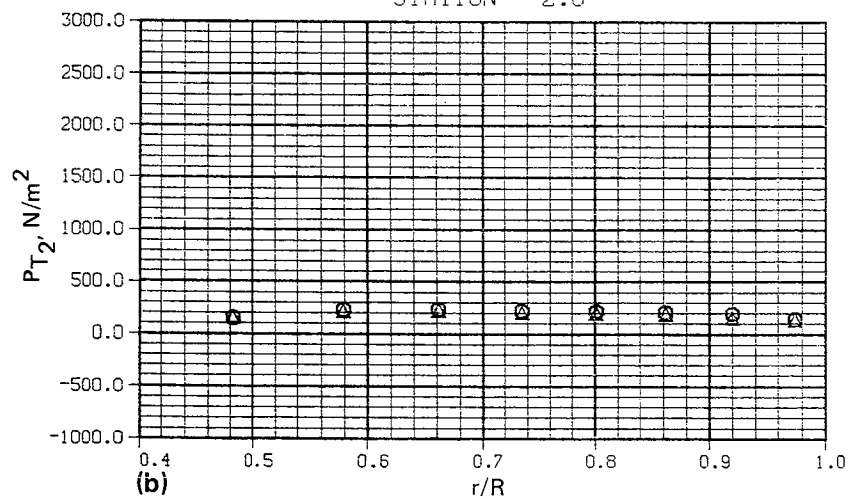
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 23. MASS FLOW: 61.55 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

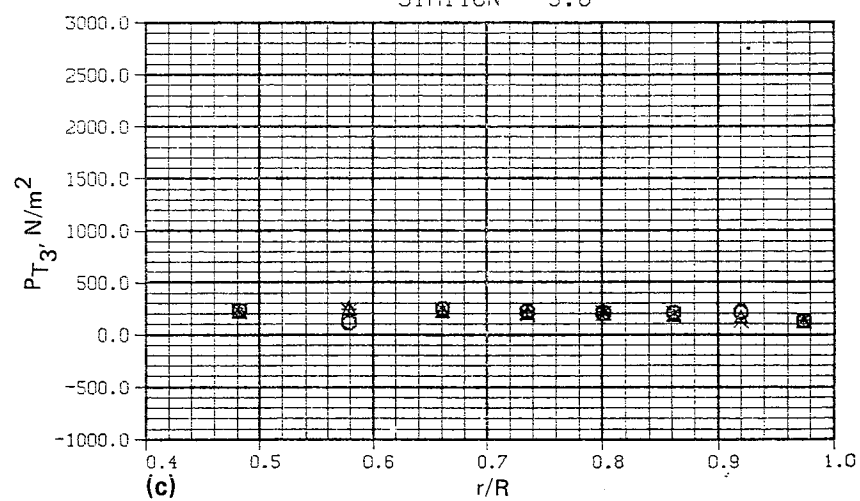


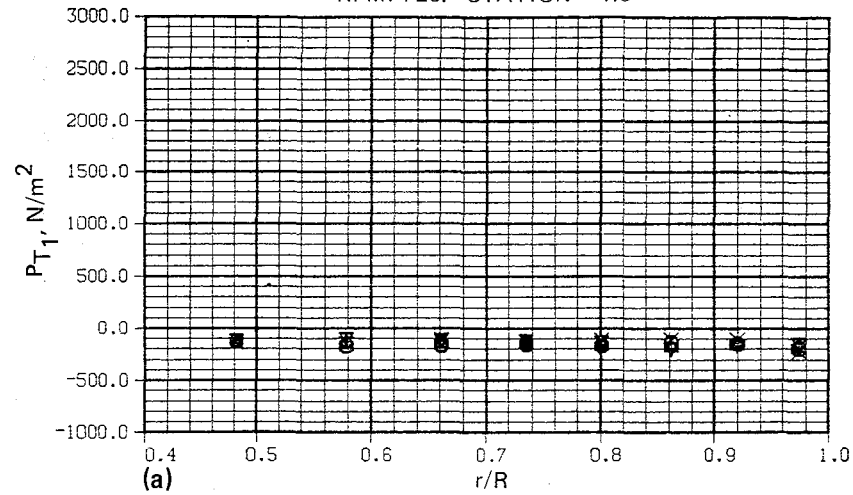
Figure 27.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

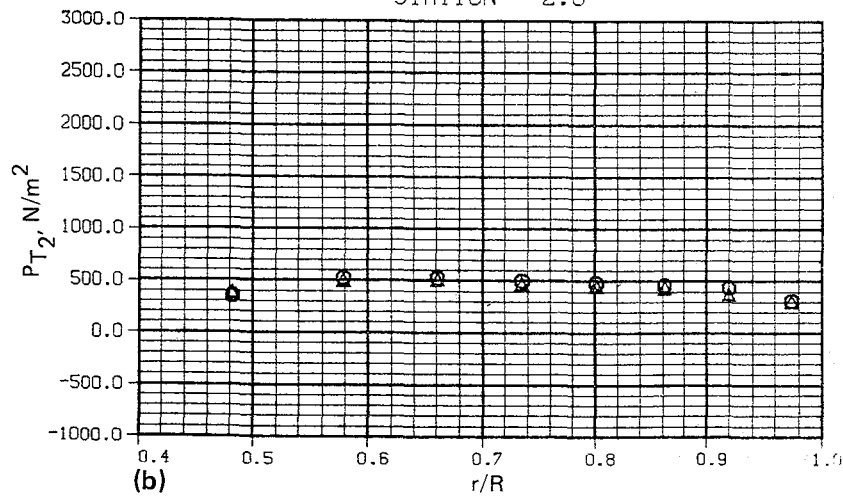
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 24. MASS FLOW: 92.49 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

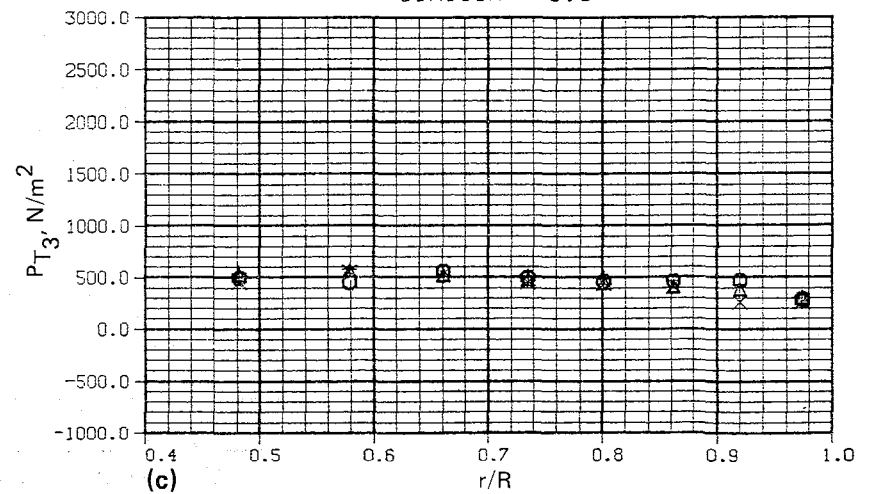


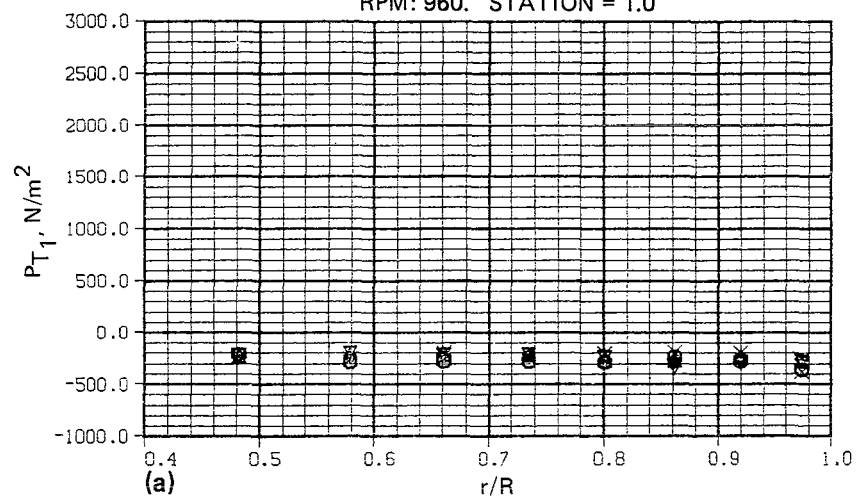
Figure 28.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

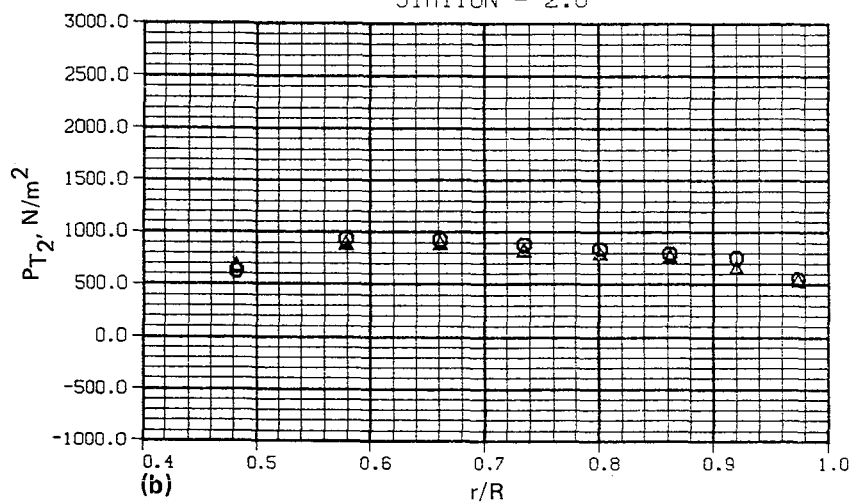
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 25. MASS FLOW: 123.84 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

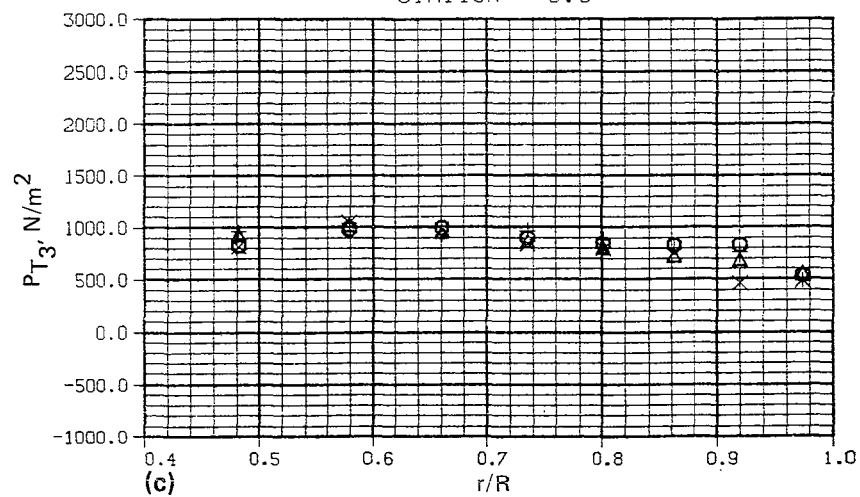


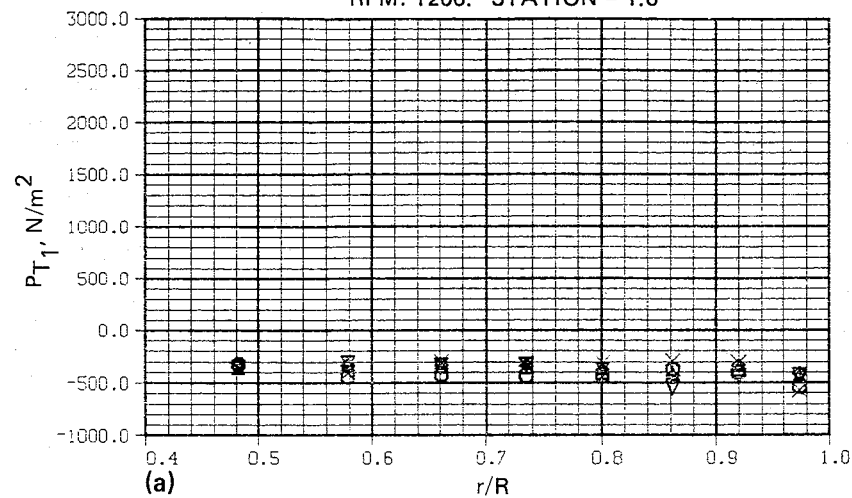
Figure 29.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

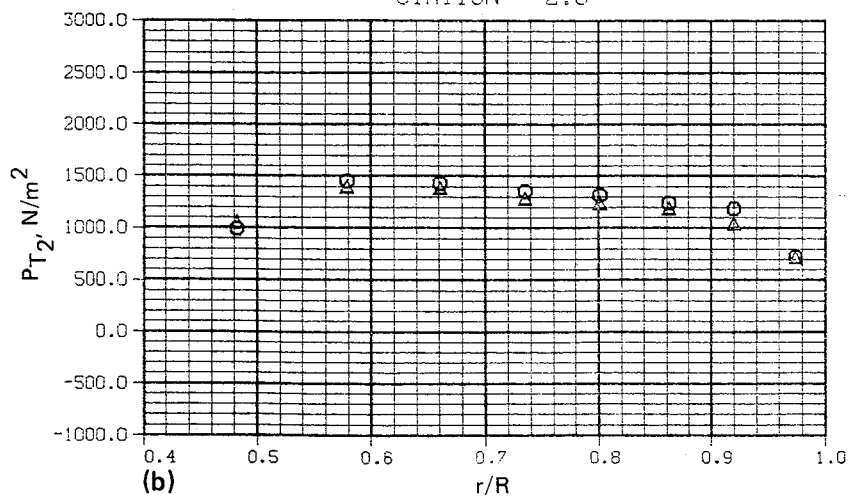
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 26. MASS FLOW: 155.37 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

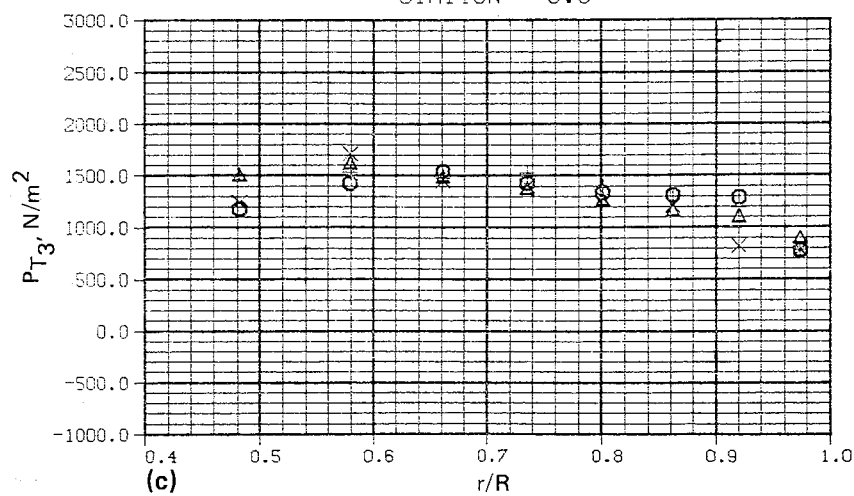


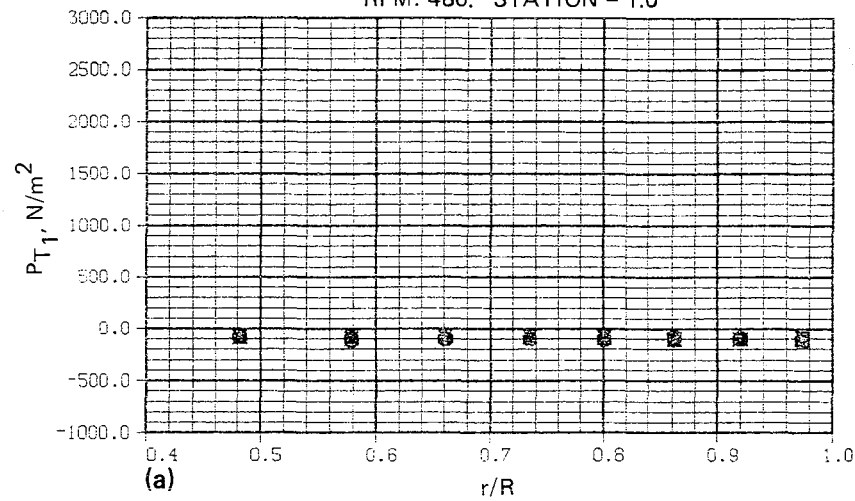
Figure 30.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

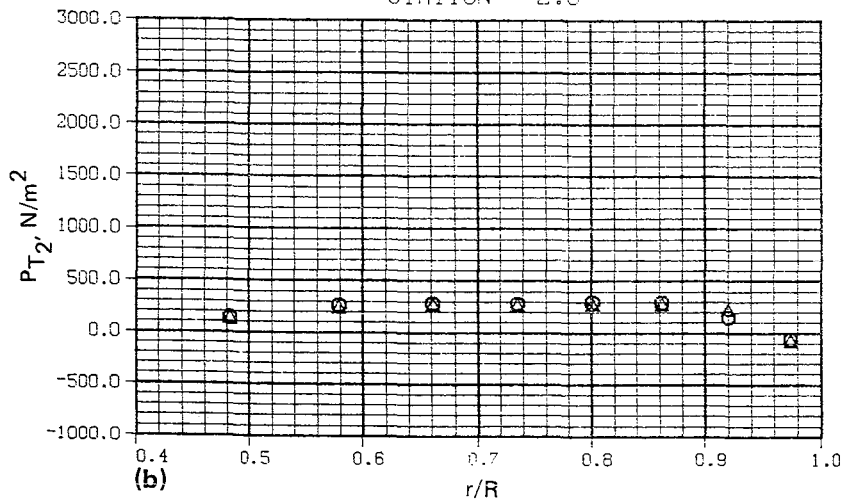
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 82. MASS FLOW: 71.56 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

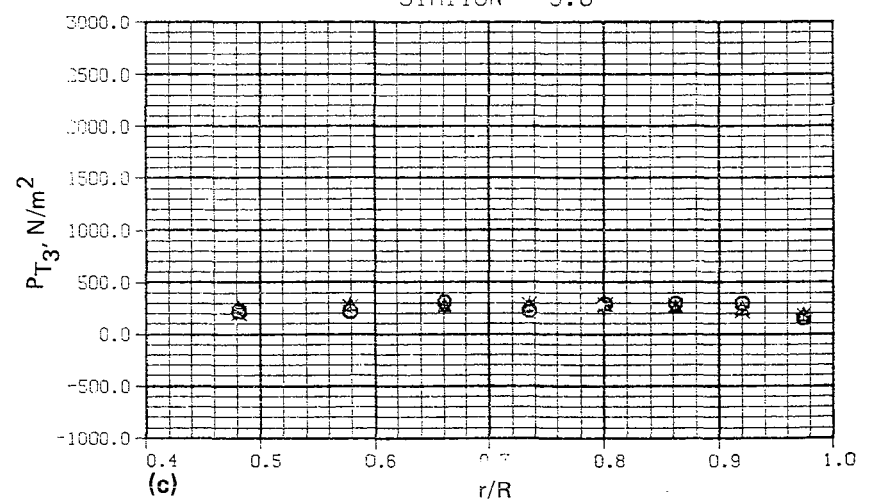


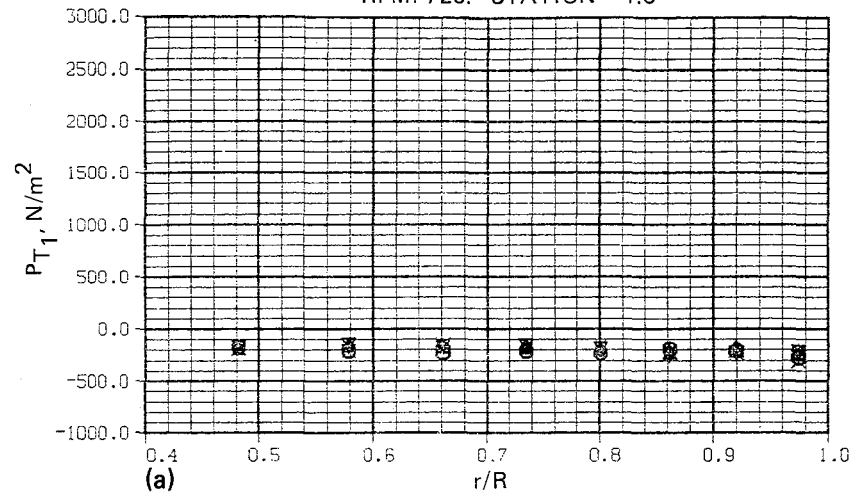
Figure 31.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

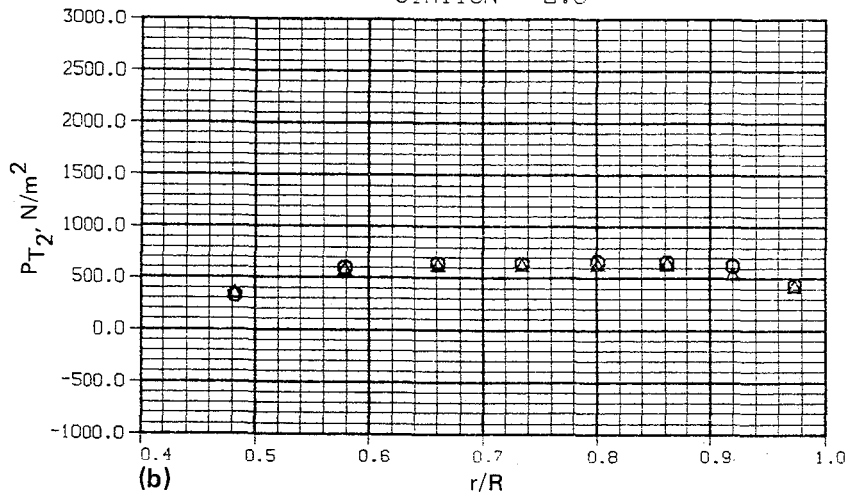
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 83. MASS FLOW: 109.06 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

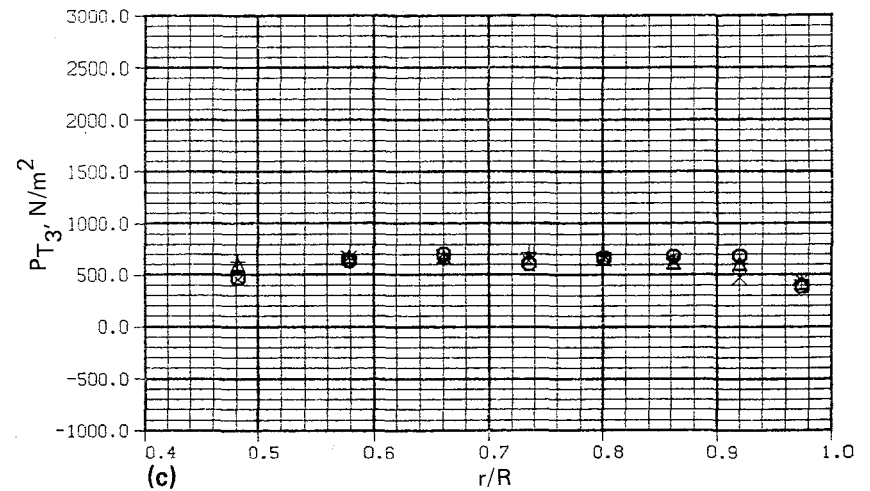


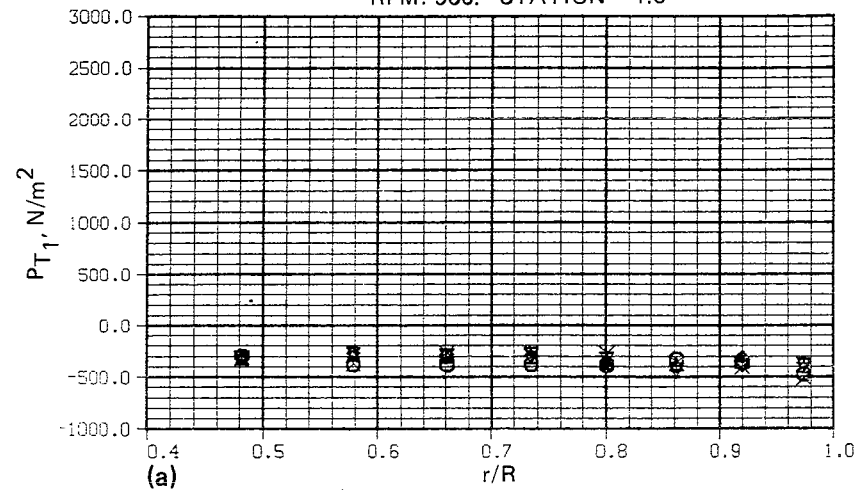
Figure 32.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

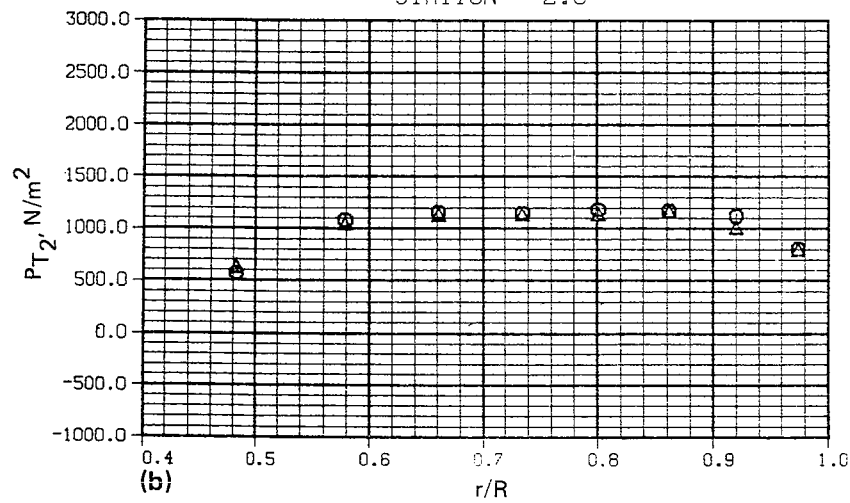
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 84. MASS FLOW: 147.68 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

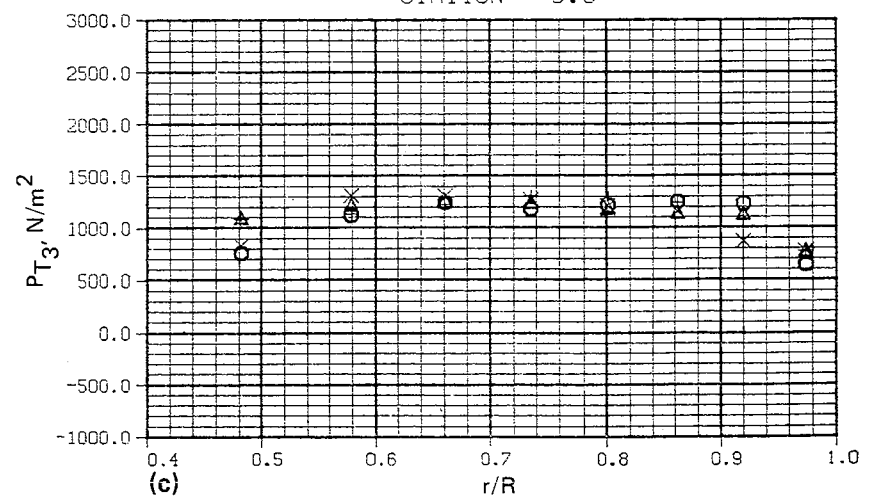


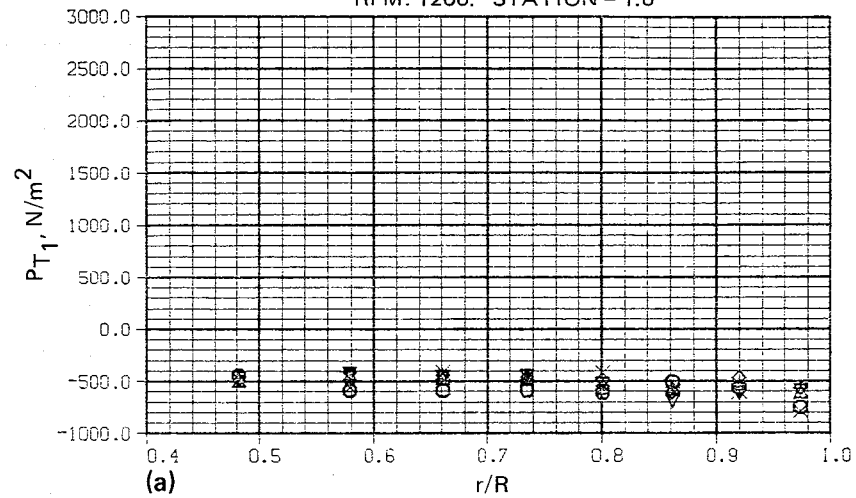
Figure 33.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

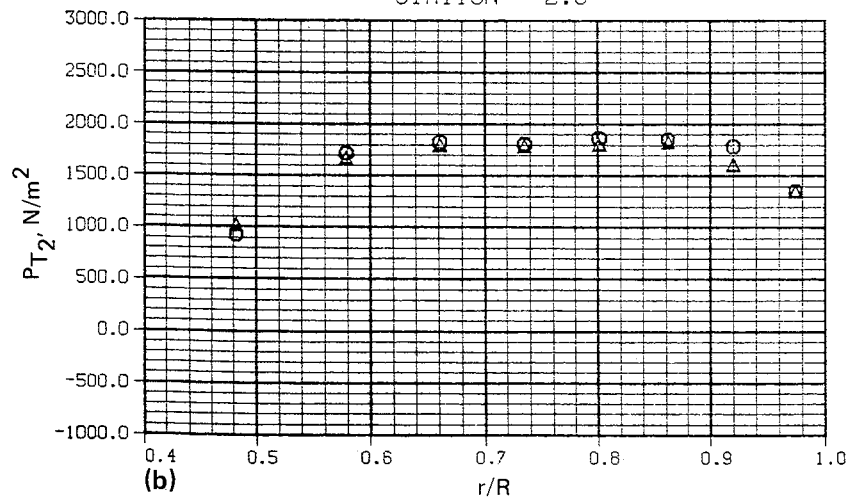
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 85. MASS FLOW: 184.83 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

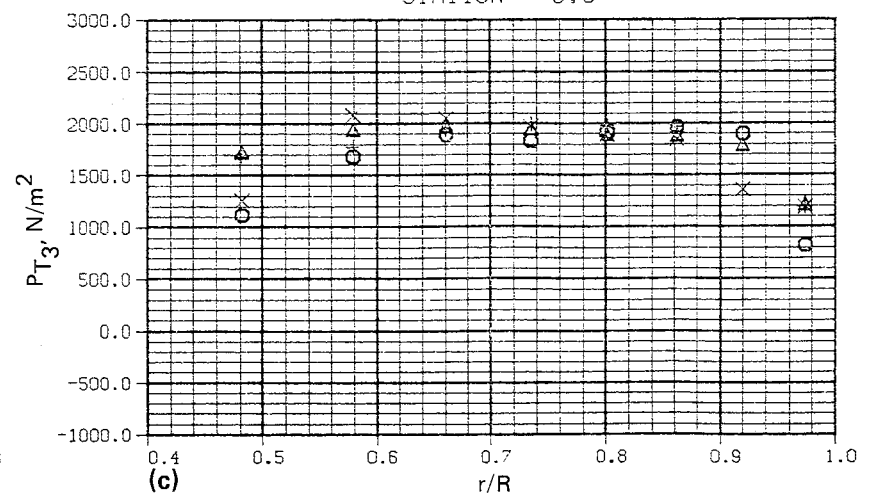


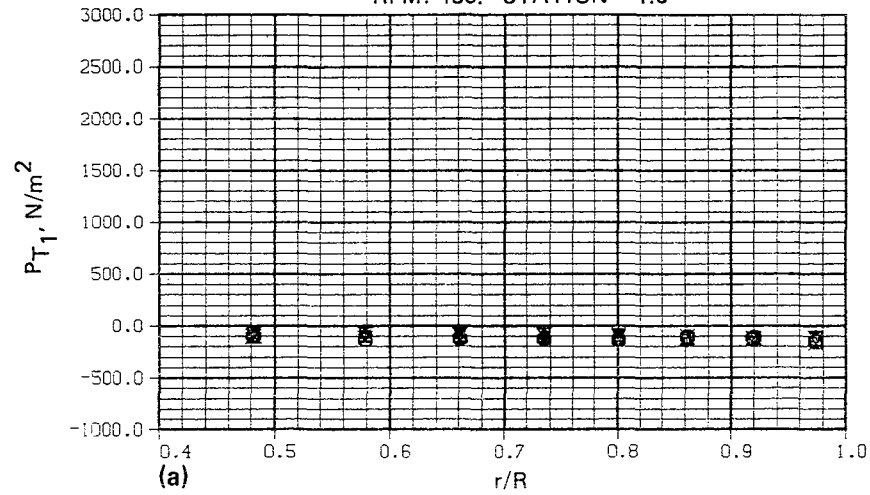
Figure 34.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

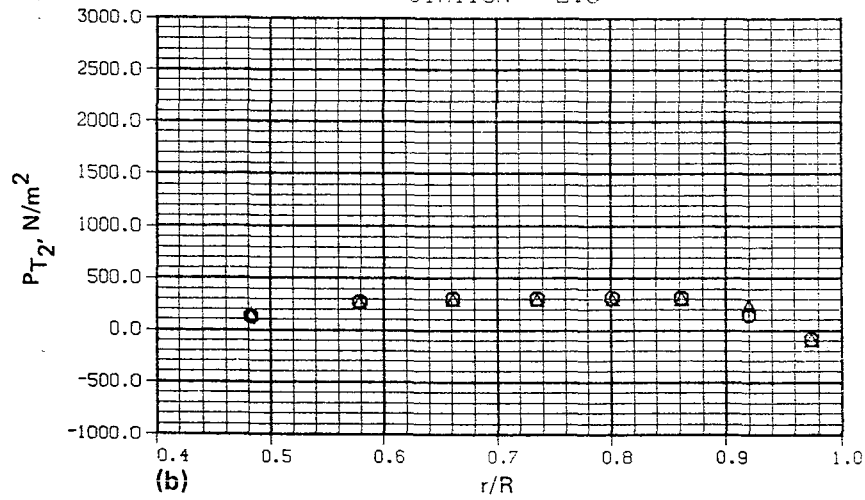
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 106. MASS FLOW: 80.92 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

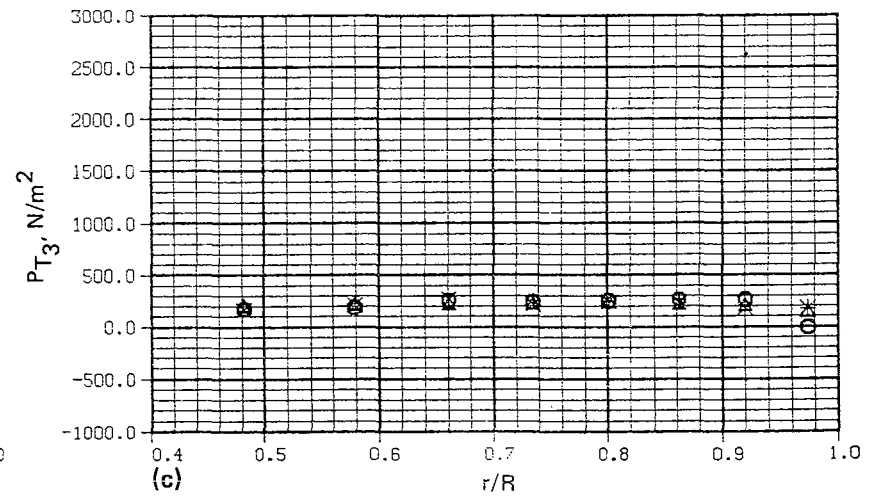


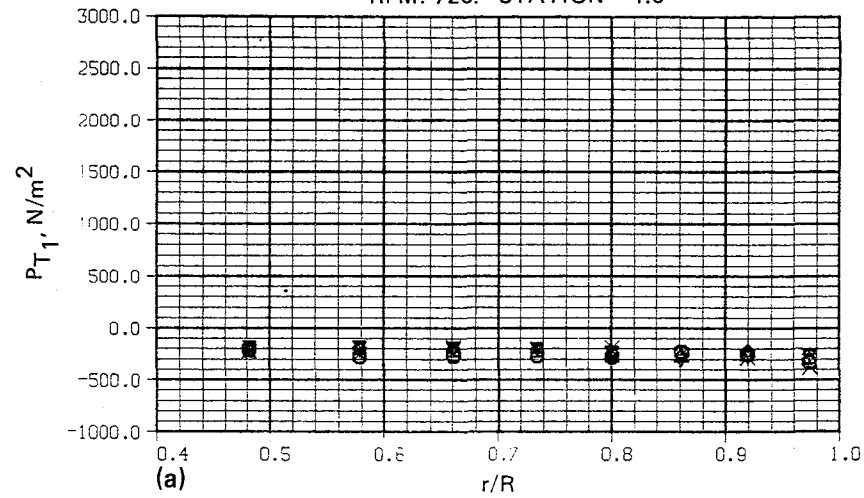
Figure 35.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

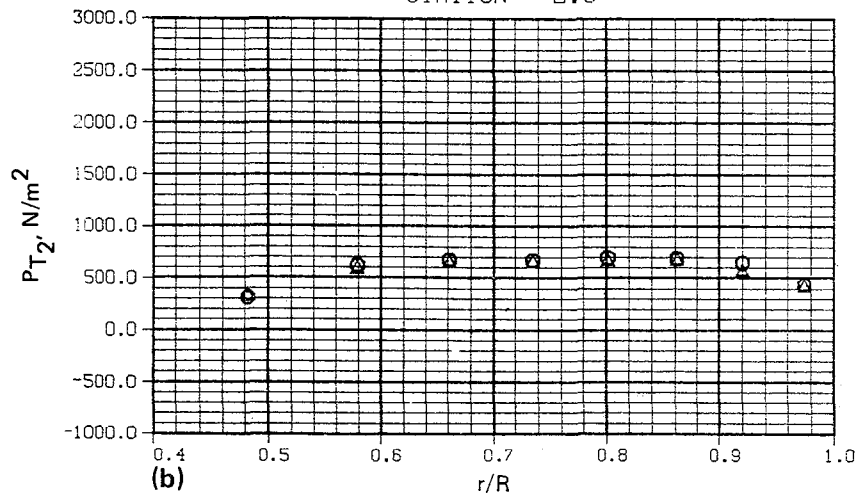
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 107. MASS FLOW: 121.56 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

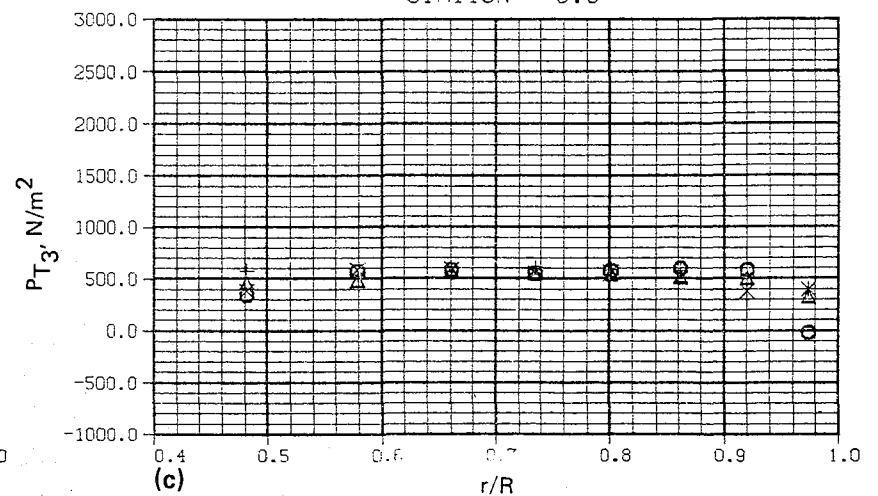


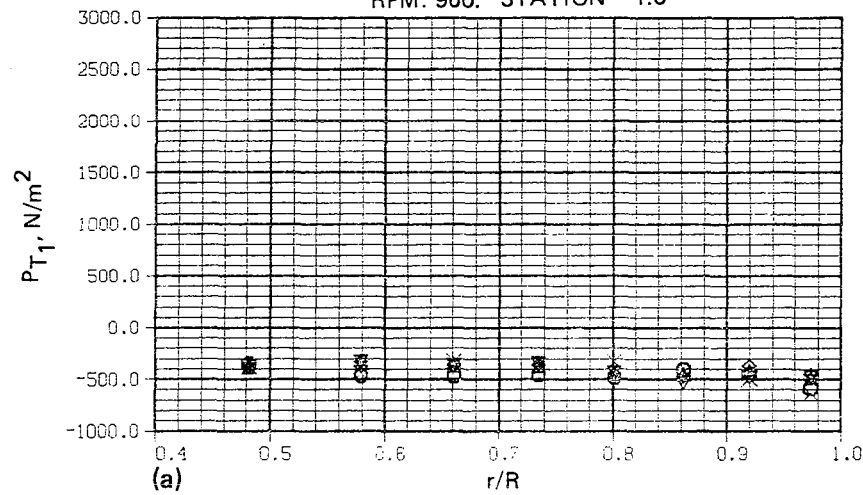
Figure 36.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

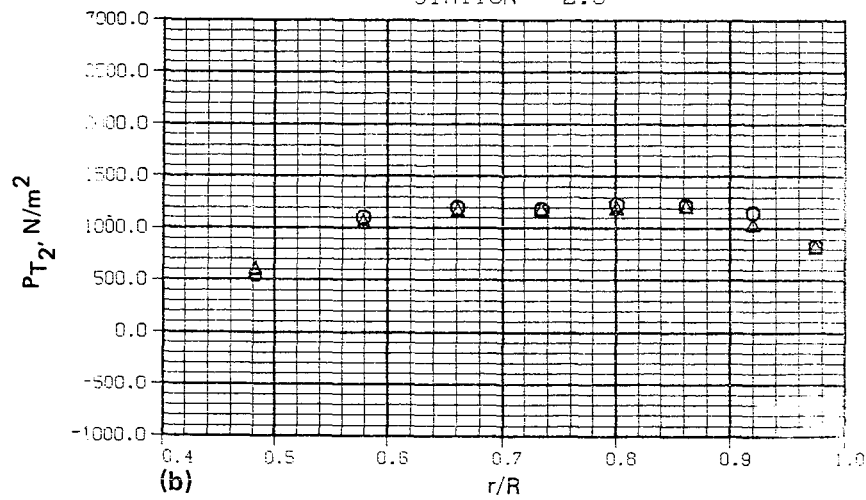
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 108. MASS FLOW: 162.66 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

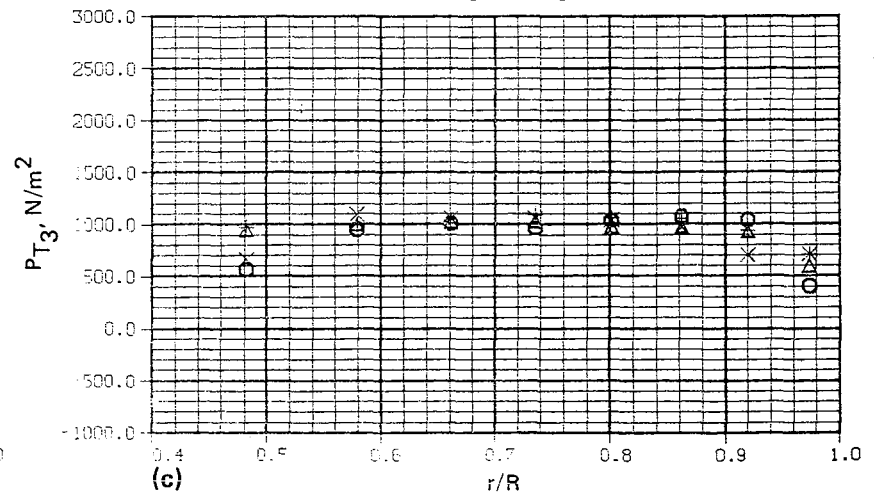


Figure 37.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES VS. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 109. MASS FLOW: 204.45 slugs/sec

RPM: 1200. STATION = 1.0

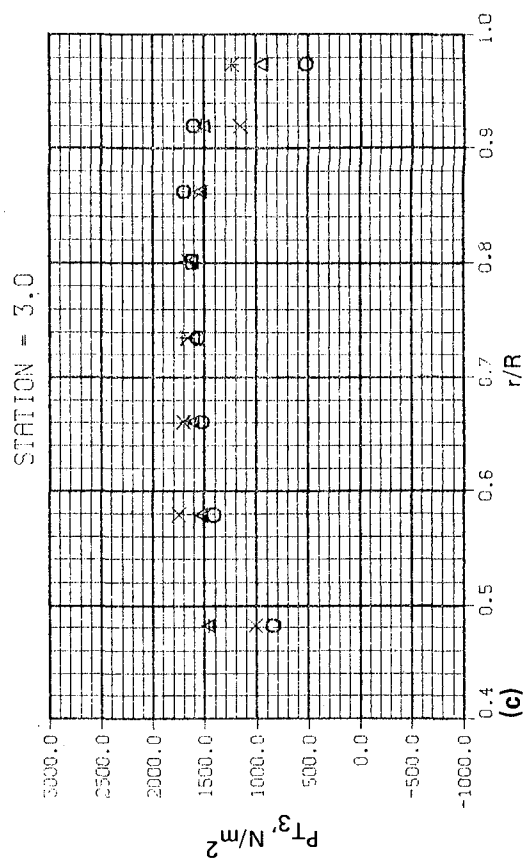
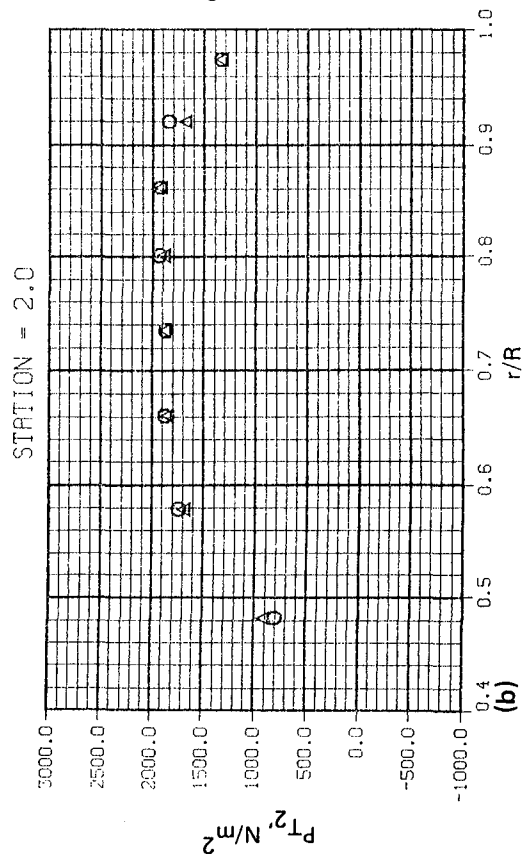
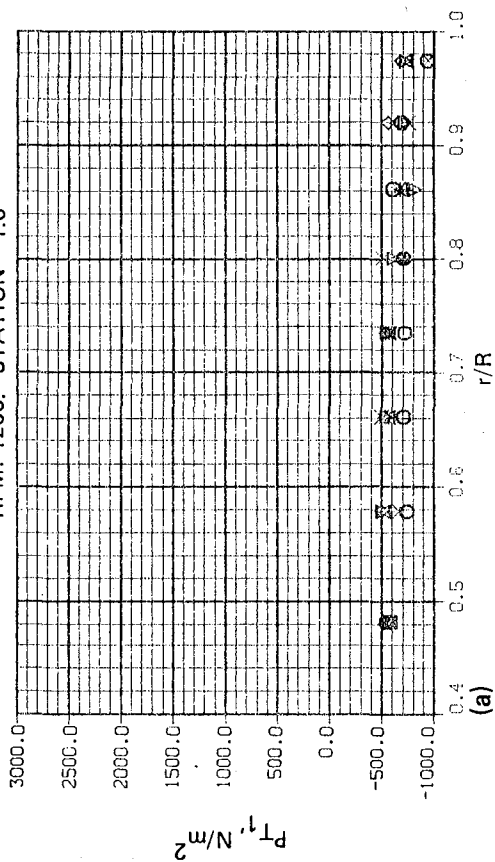


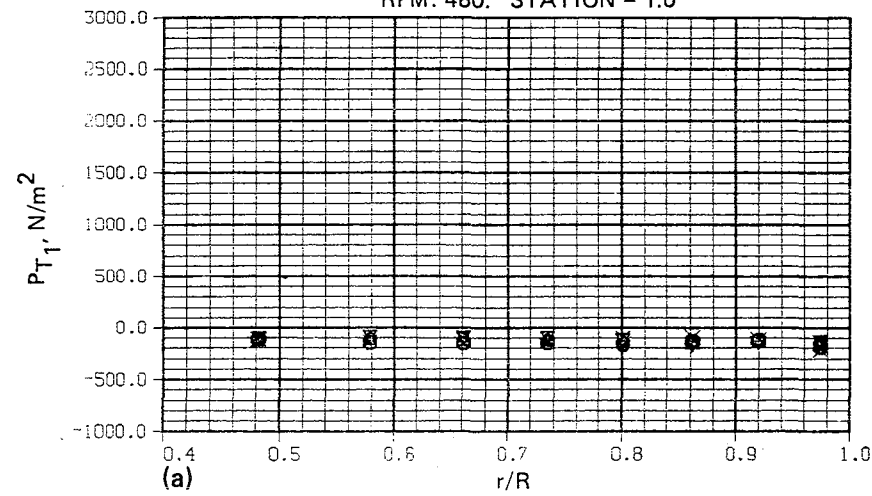
Figure 38.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

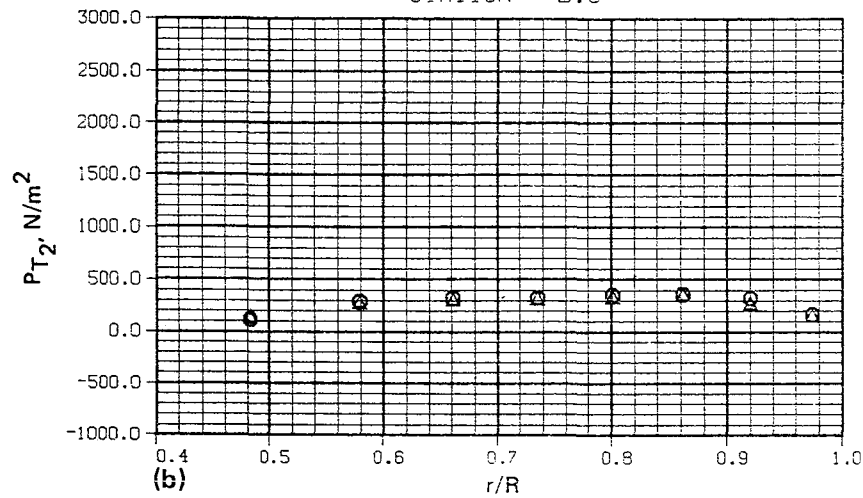
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 134. MASS FLOW: 87.55 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

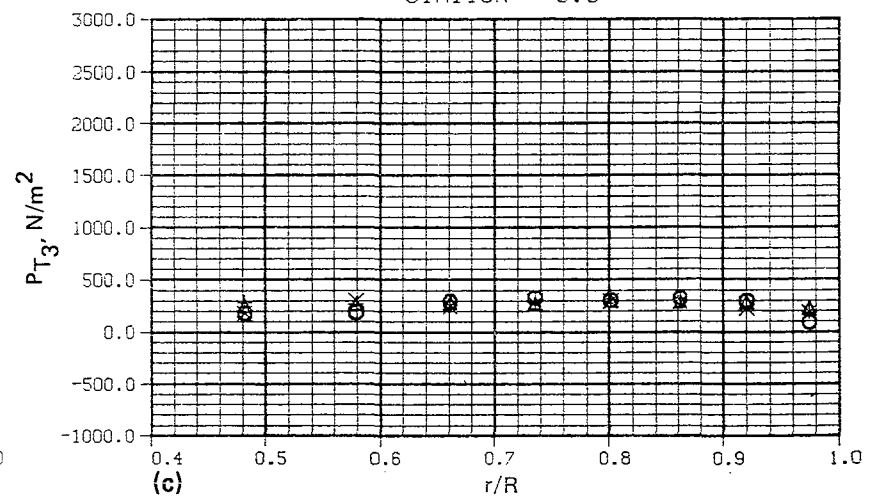


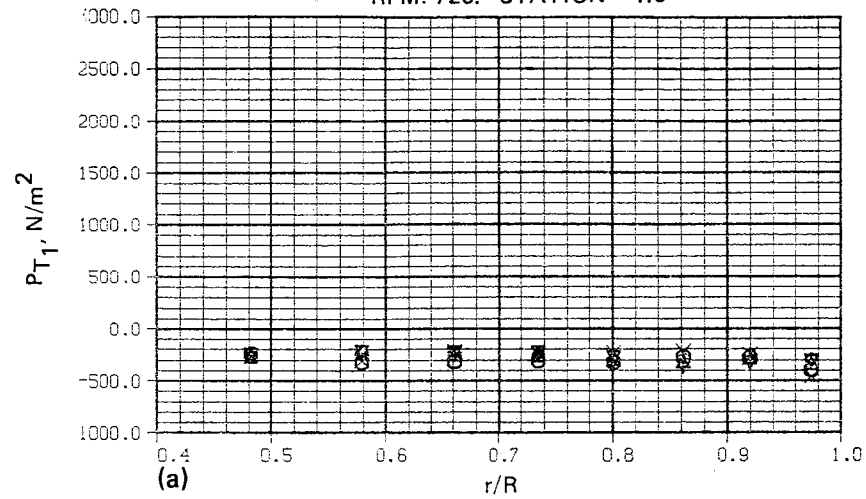
Figure 39.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

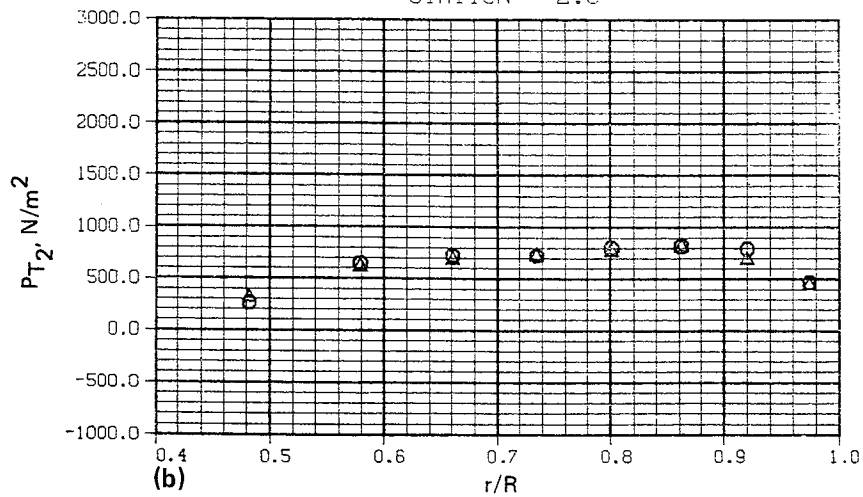
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO:135. MASS FLOW:132.58slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

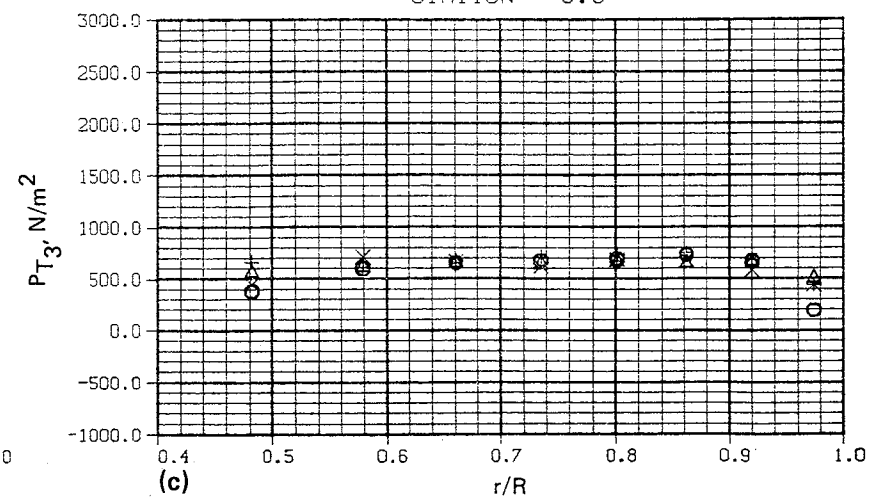


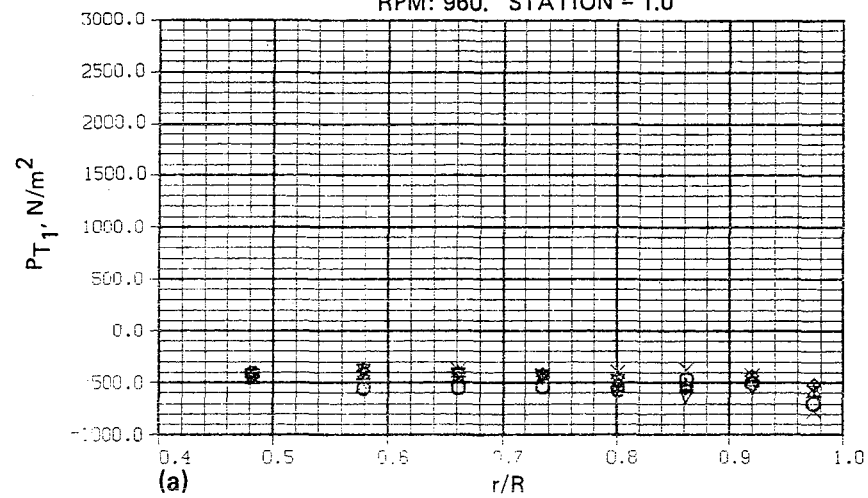
Figure 40.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

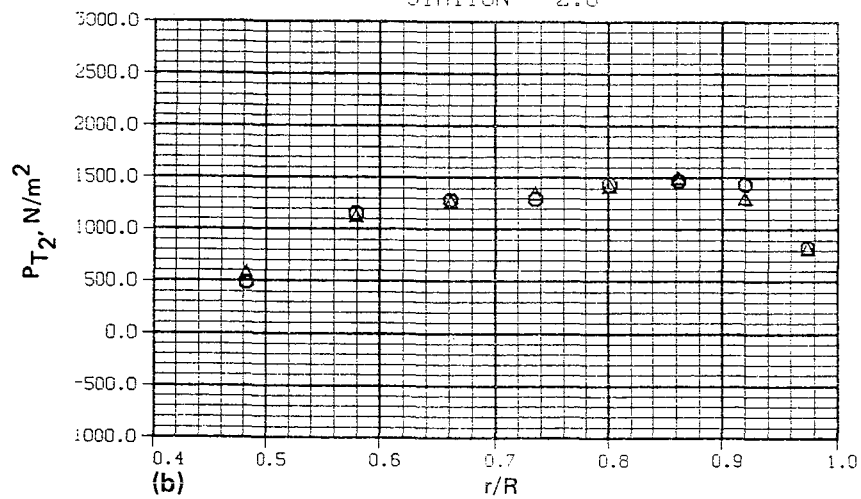
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 136. MASS FLOW: 177.75 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

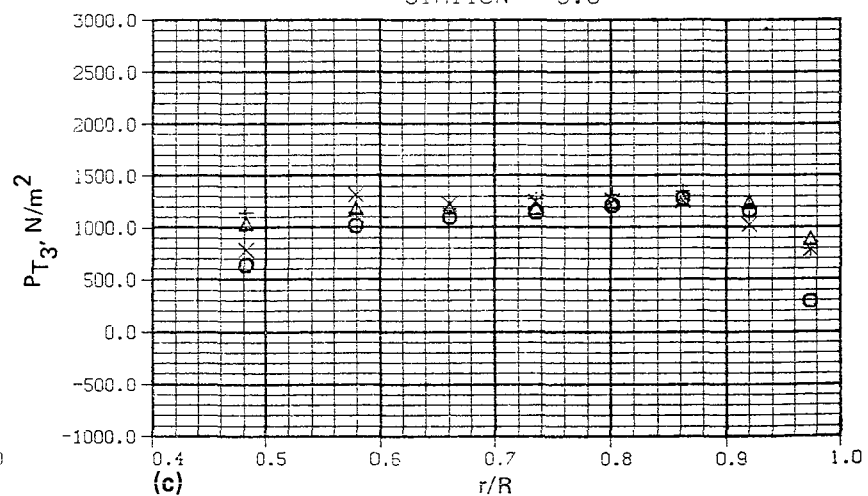


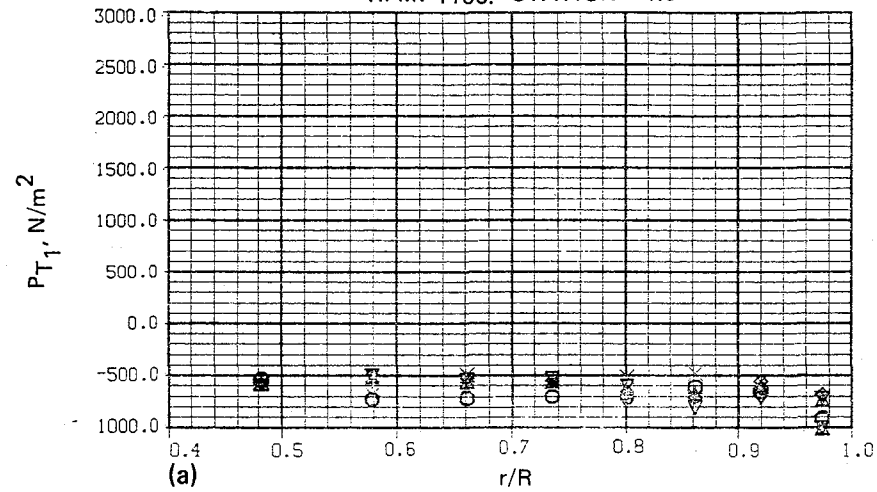
Figure 41.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

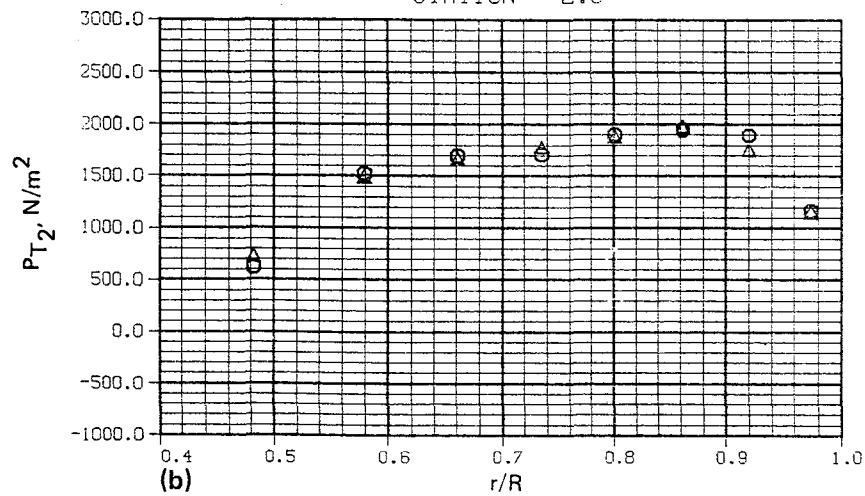
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 137. MASS FLOW: 203.95 slugs/sec

RPM: 1100. STATION = 1.0



STATION = 2.0



STATION = 3.0

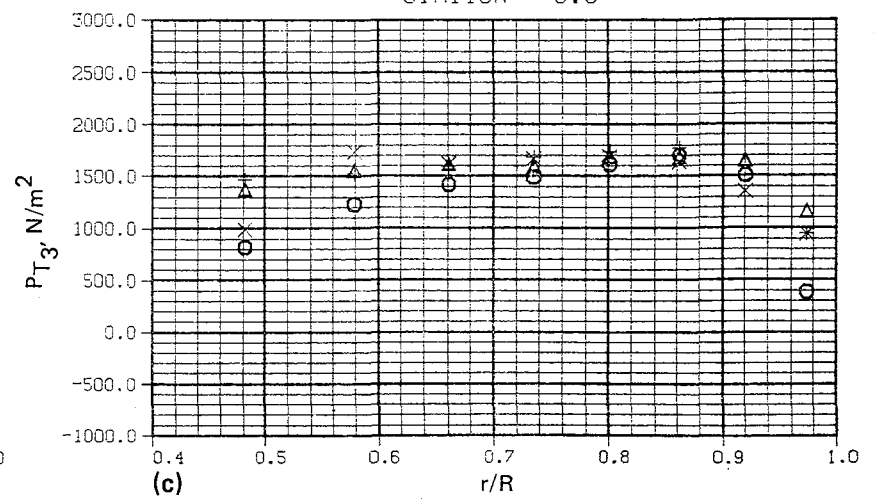


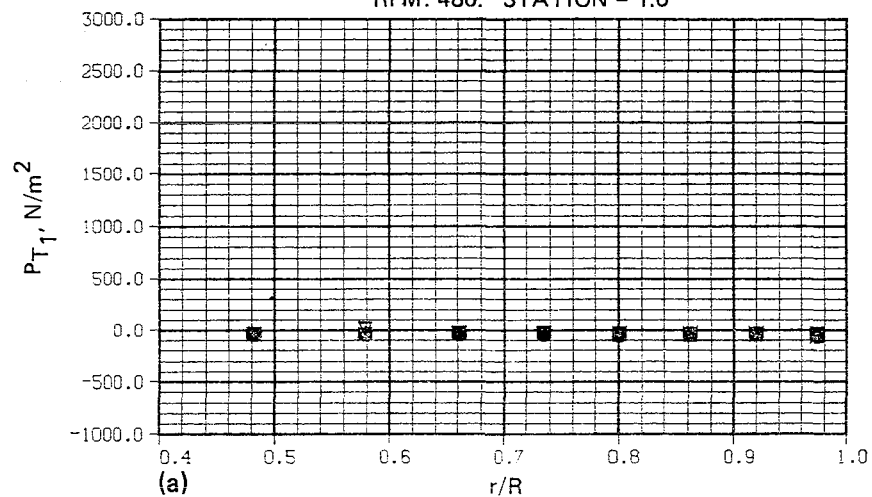
Figure 42.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

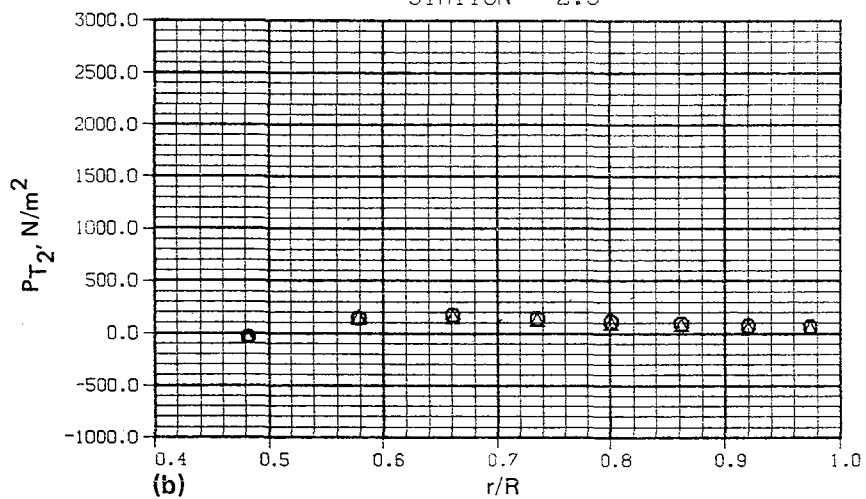
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 469. MASS FLOW: 42.20 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

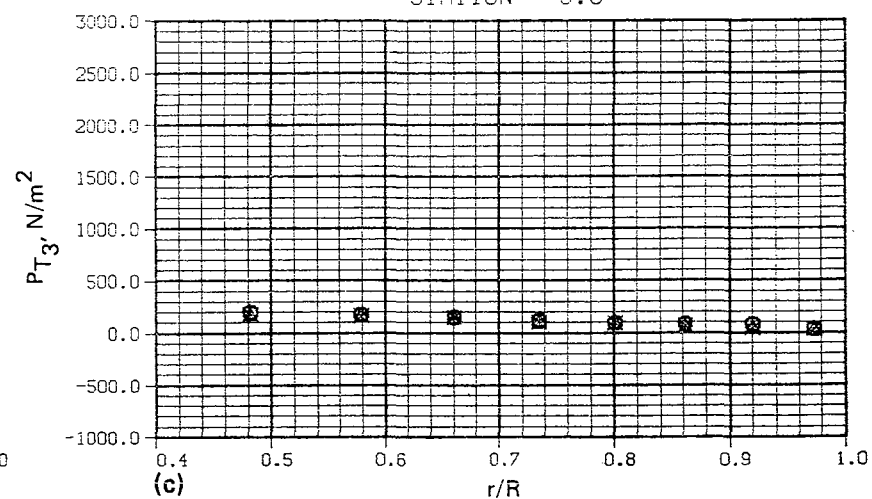


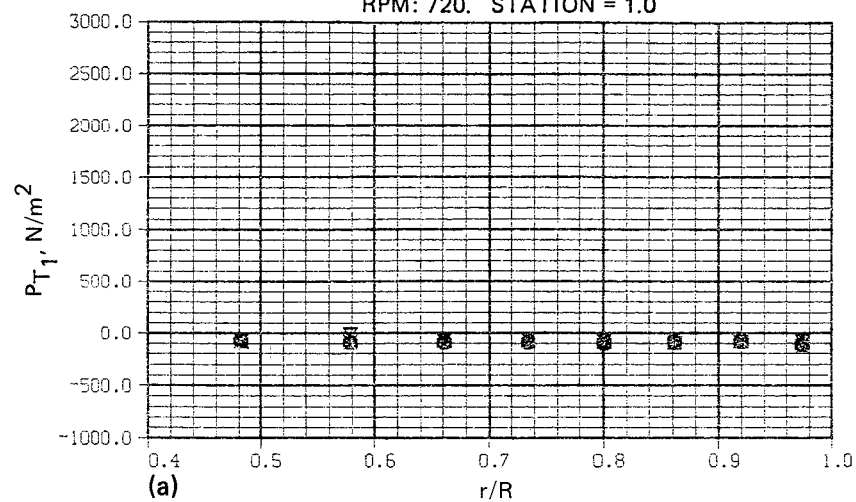
Figure 43.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

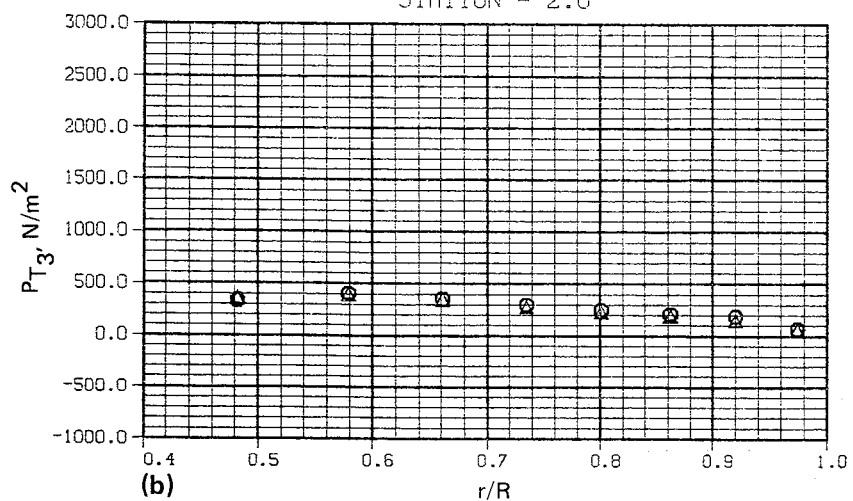
BLADE TYPE: 2. BLADE ANGLE: 24.5.

RUN NO: 470. MASS FLOW: 66.39 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

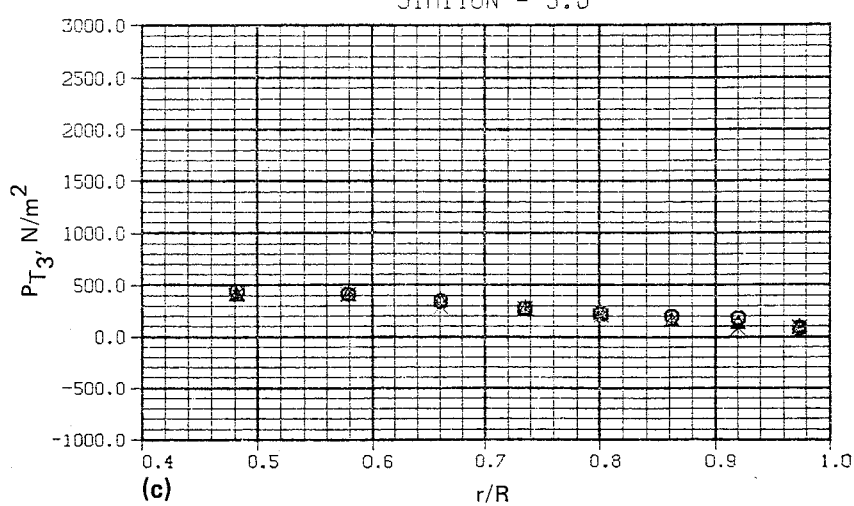


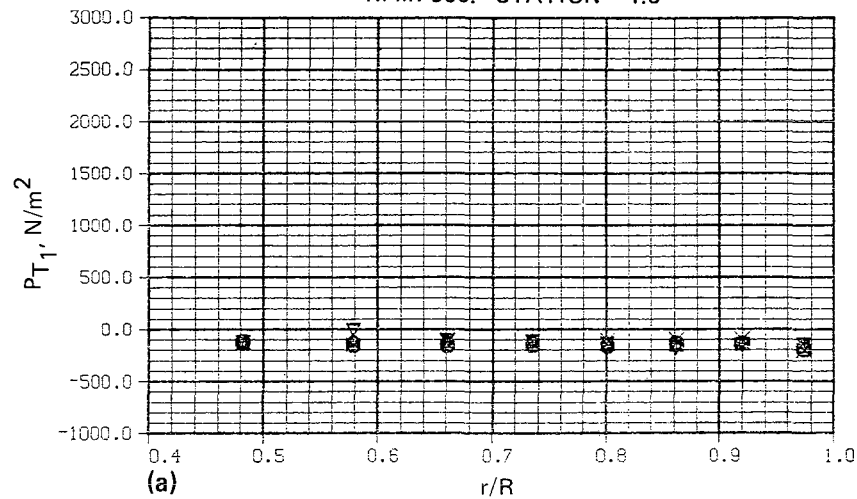
Figure 44.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

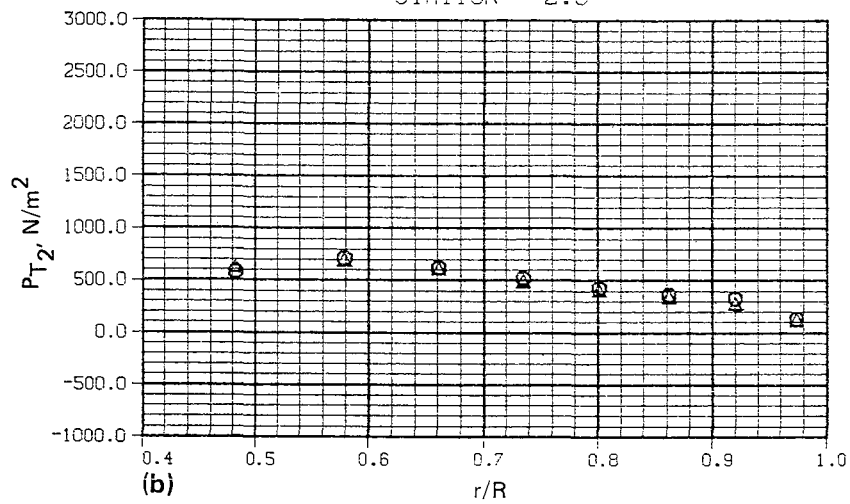
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 471. MASS FLOW: 88.89 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

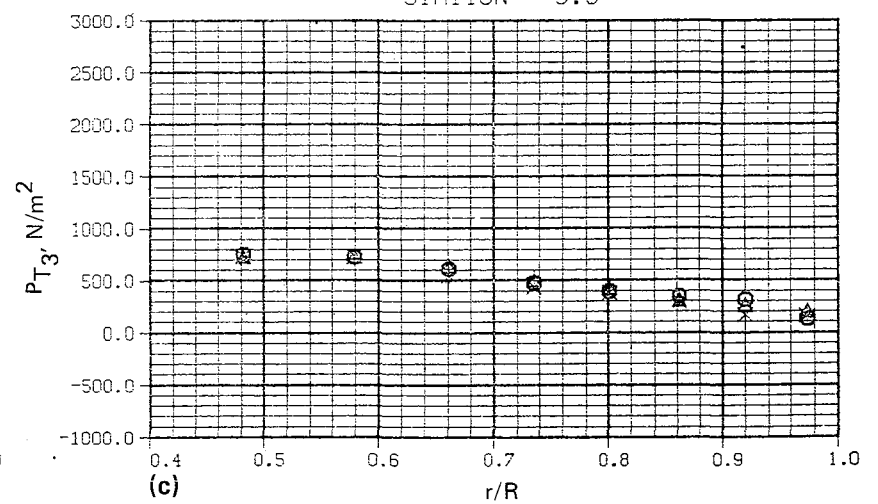


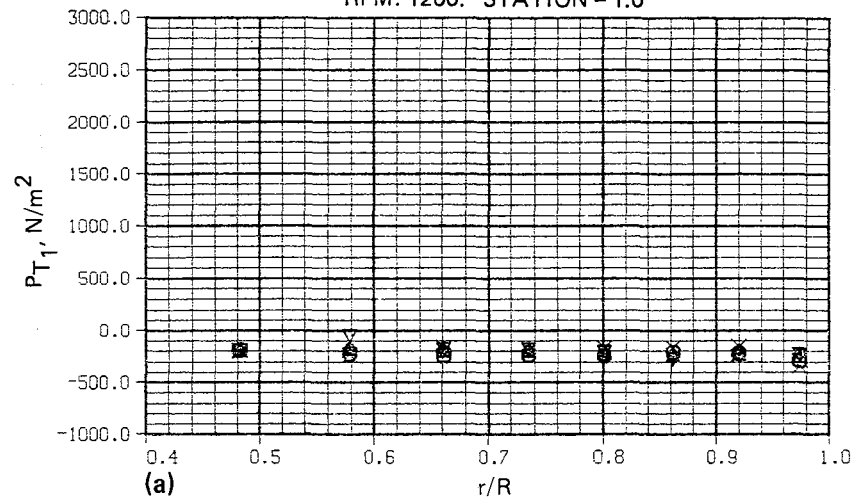
Figure 45.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

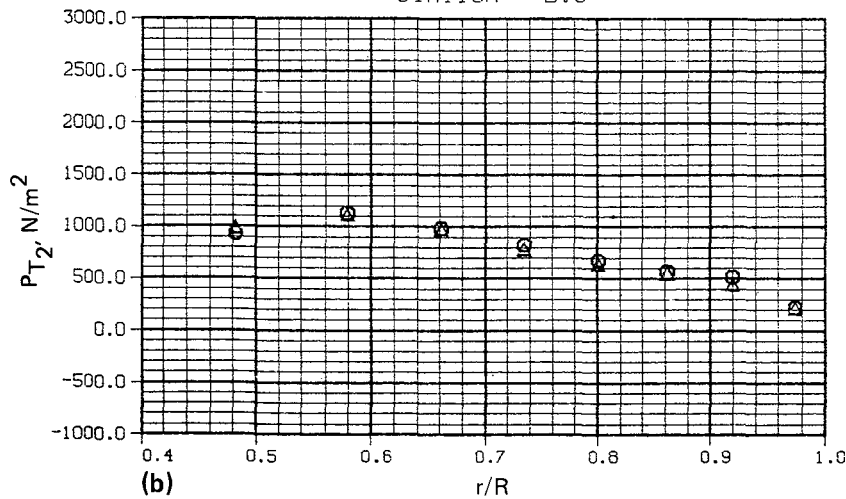
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 472. MASS FLOW: 112.20 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

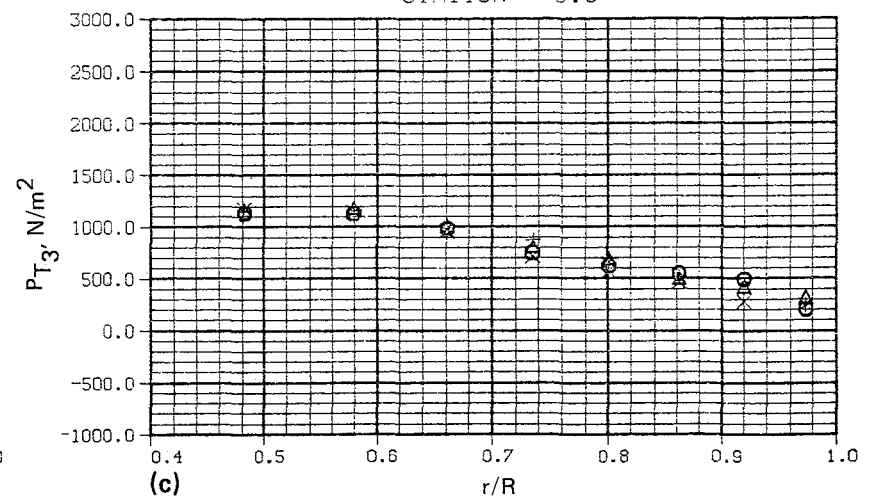


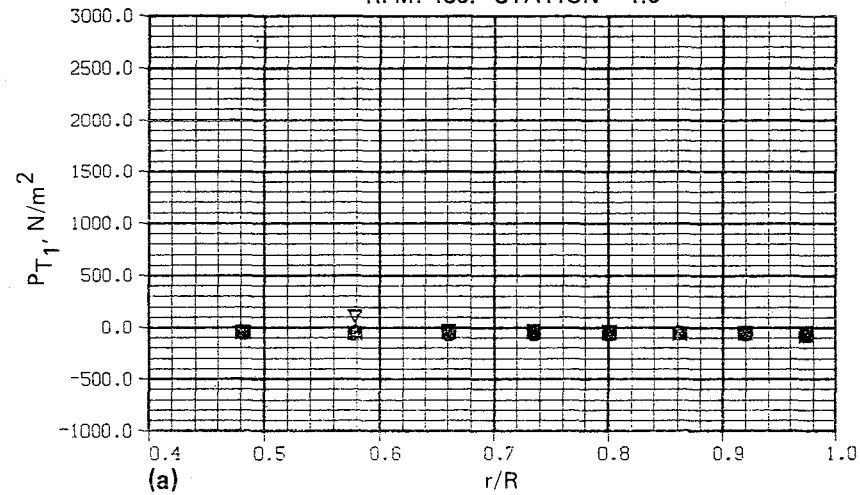
Figure 46.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

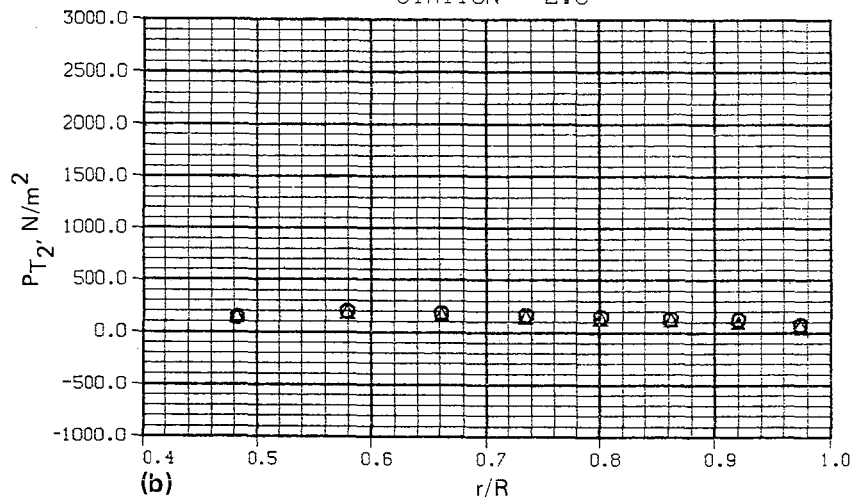
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 381. MASS FLOW: 50.96 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

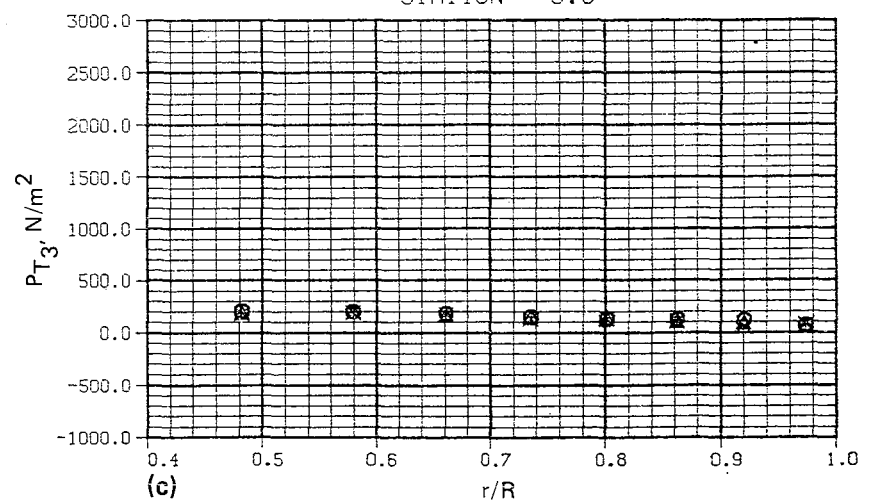


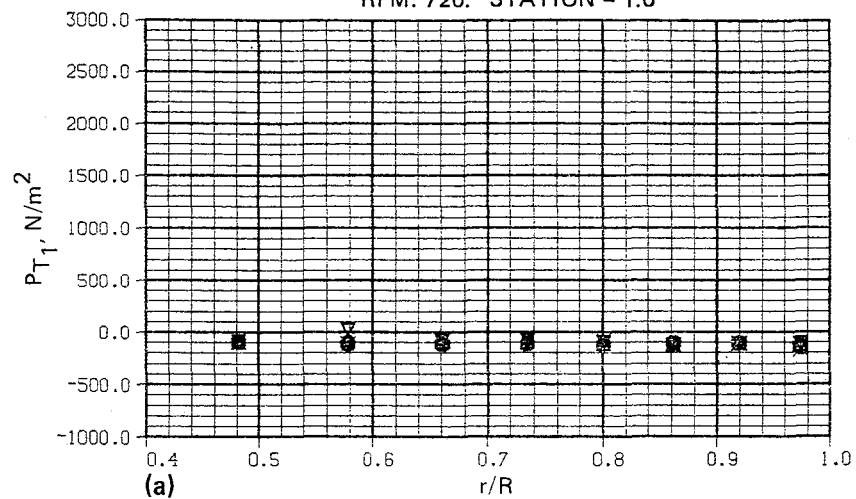
Figure 47.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

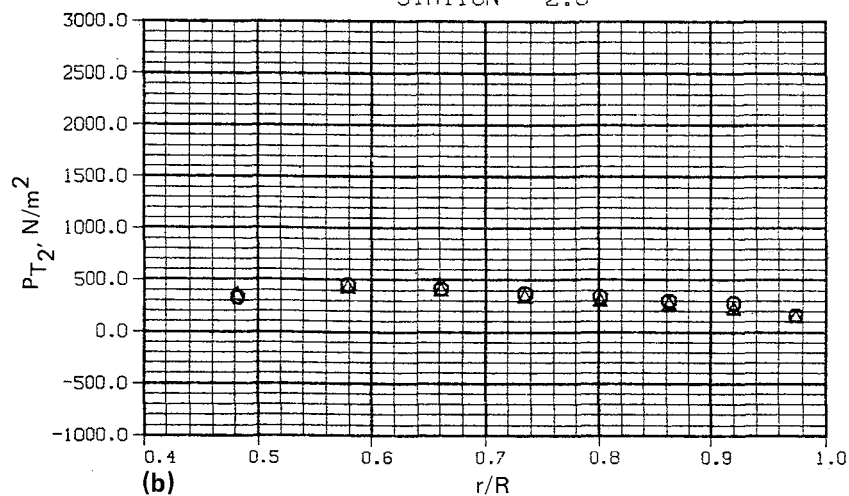
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 382. MASS FLOW: 76.39 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

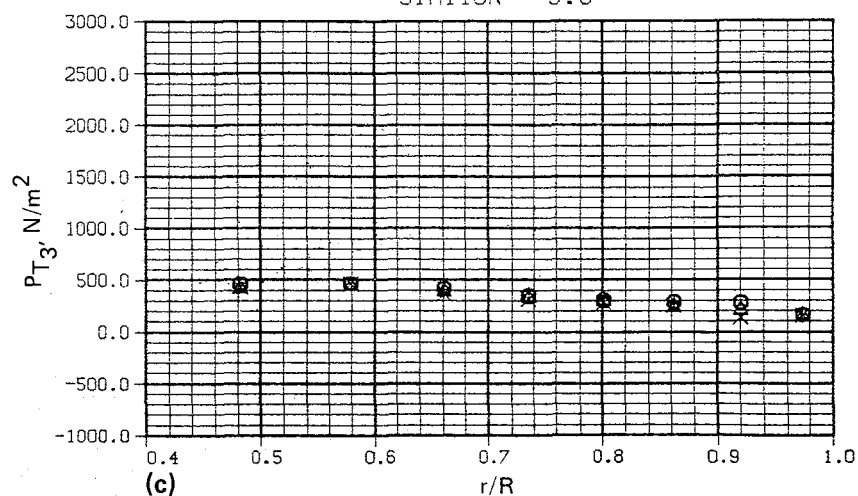


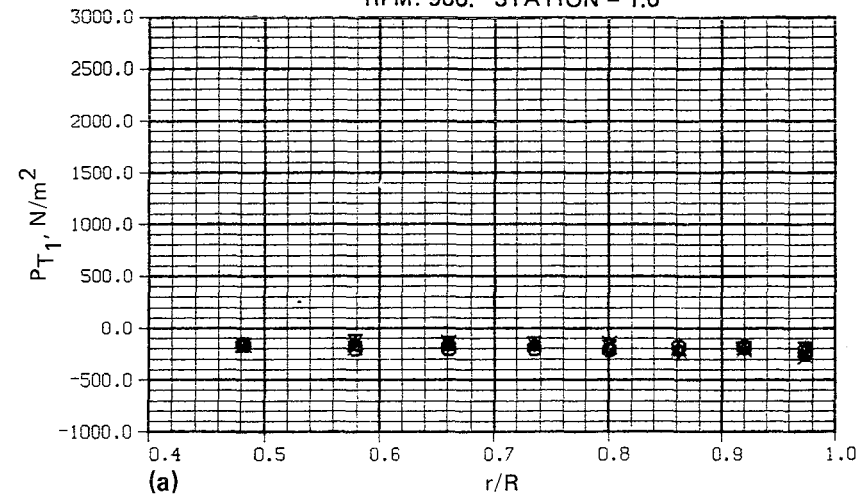
Figure 48.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

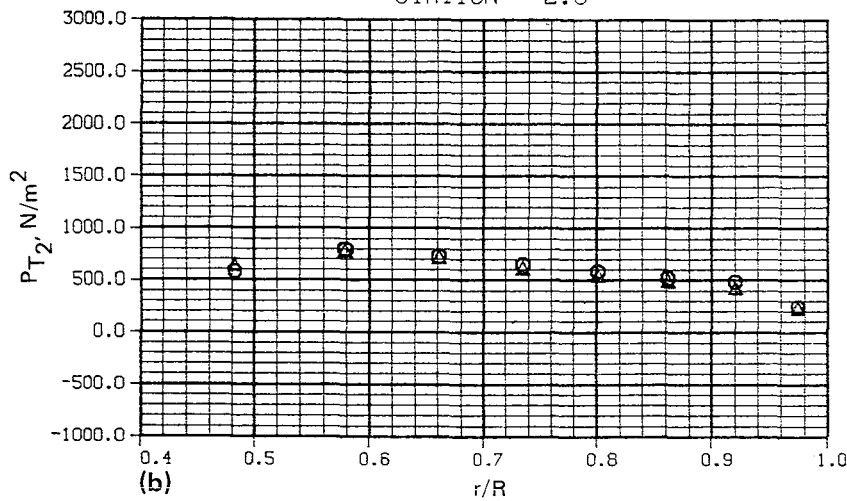
BLADE TYPE: 2, BLADE ANGLE: 29.2

RUN NO: 383. MASS FLOW: 102.58 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

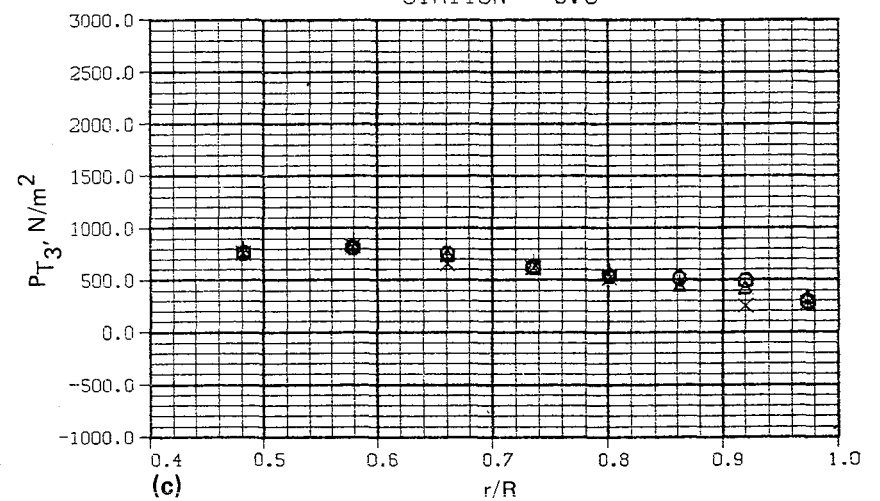


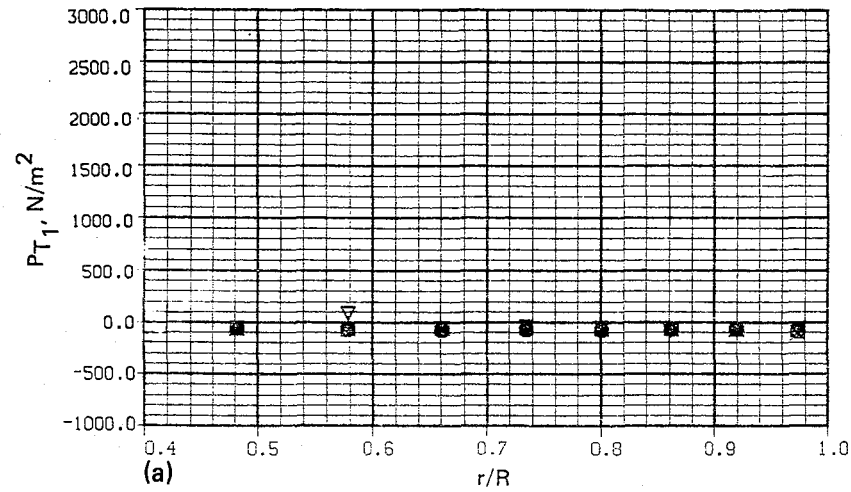
Figure 49.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

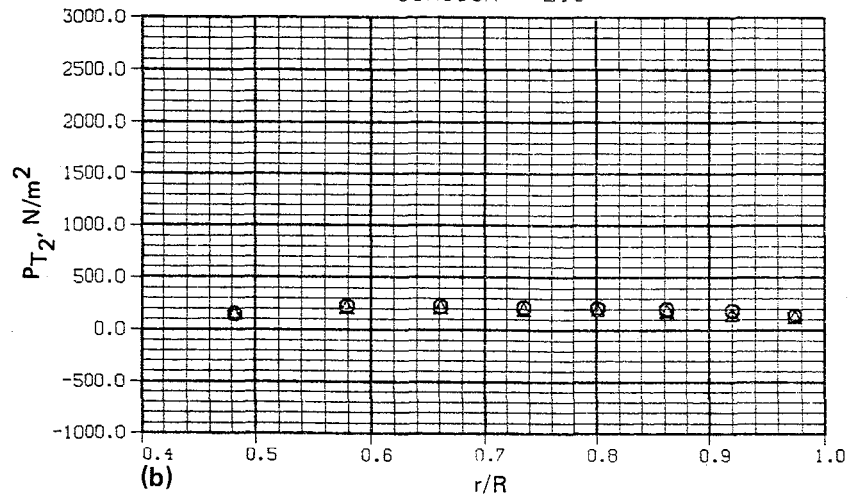
BLADE TYPE: 1. BLADE ANGLE: 35.4

RUN NO: 321. MASS FLOW: 59.19 slugs/sec

RPM: 477. STATION = 1.0



STATION = 2.0



STATION = 3.0

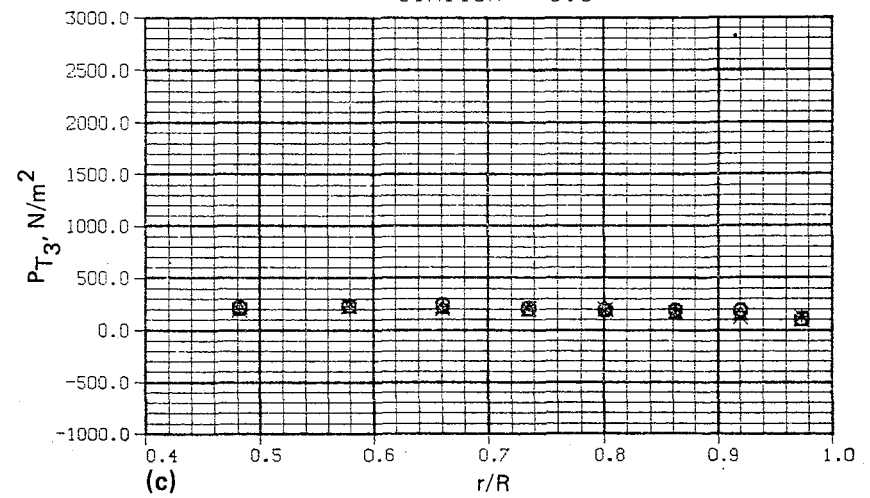


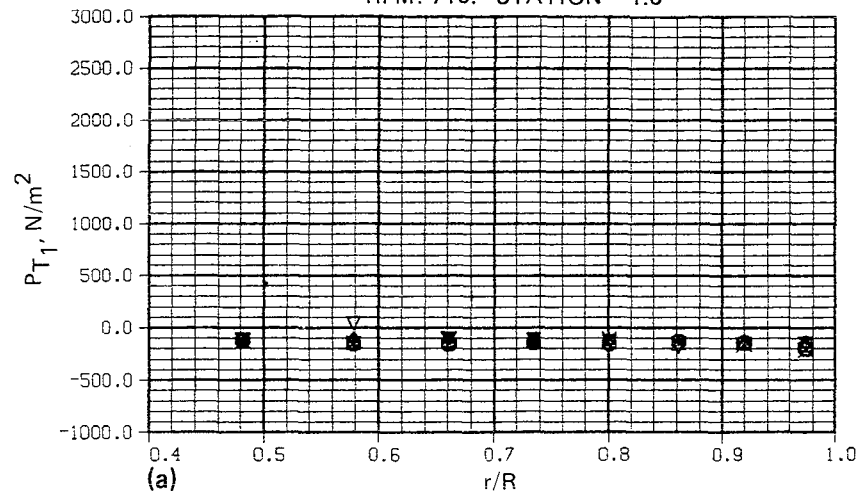
Figure 50.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

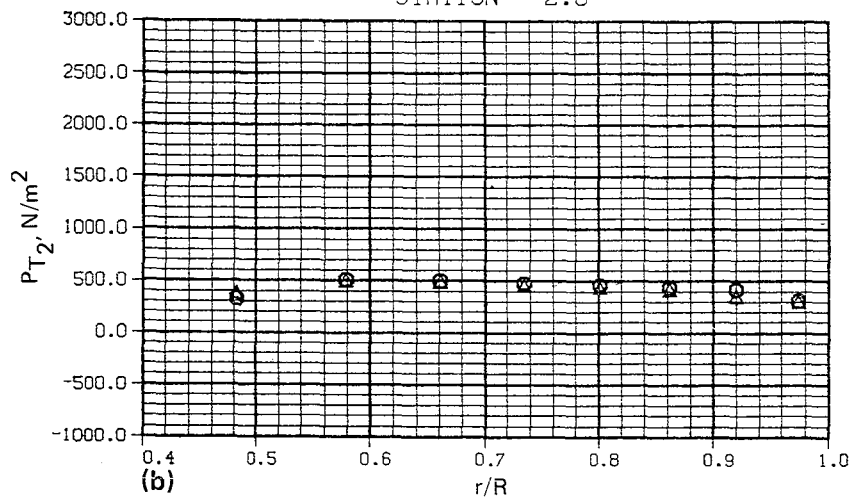
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 322. MASS FLOW: 89.26 slugs/sec

RPM: 719. STATION = 1.0



STATION = 2.0



STATION = 3.0

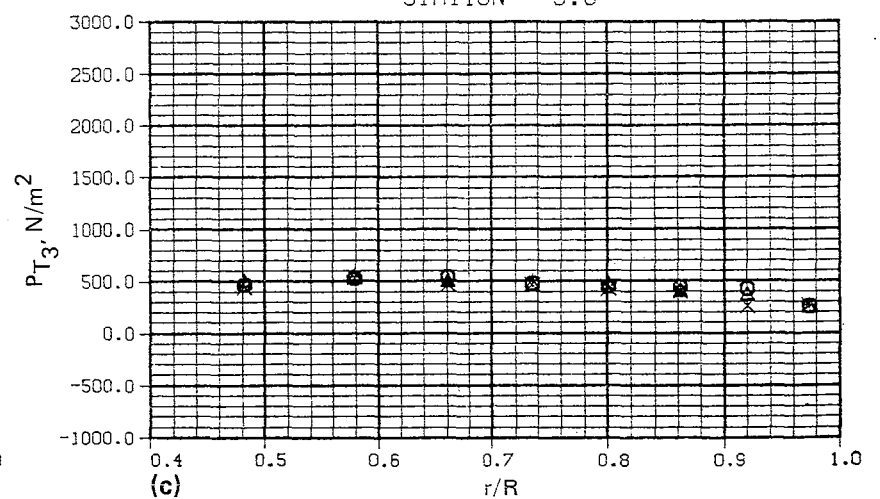
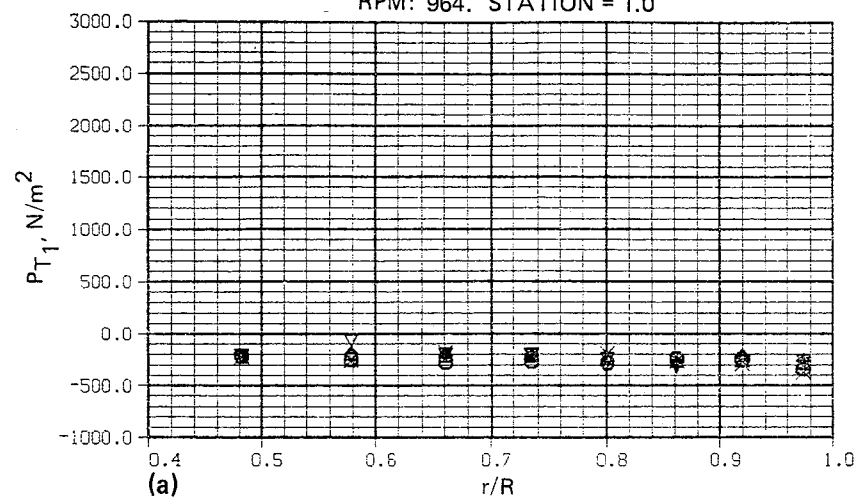
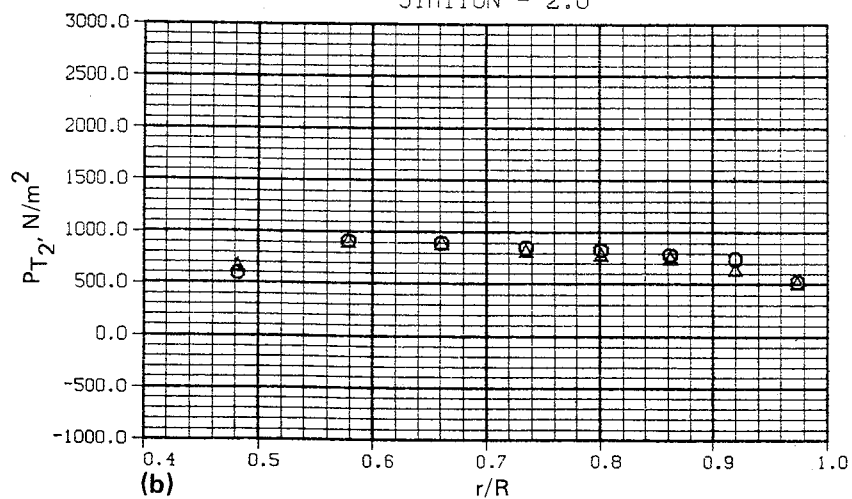


Figure 51.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 323. MASS FLOW: 120.44 slugs/sec
 RPM: 964. STATION = 1.0



STATION = 2.0



STATION = 3.0

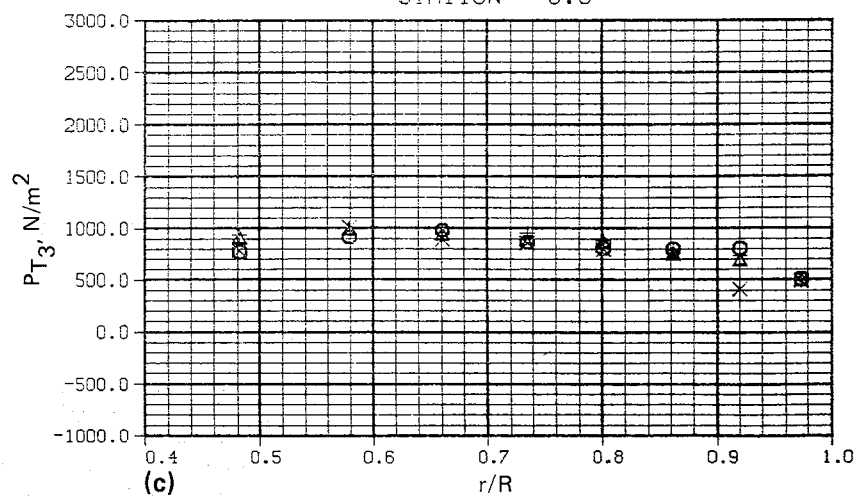


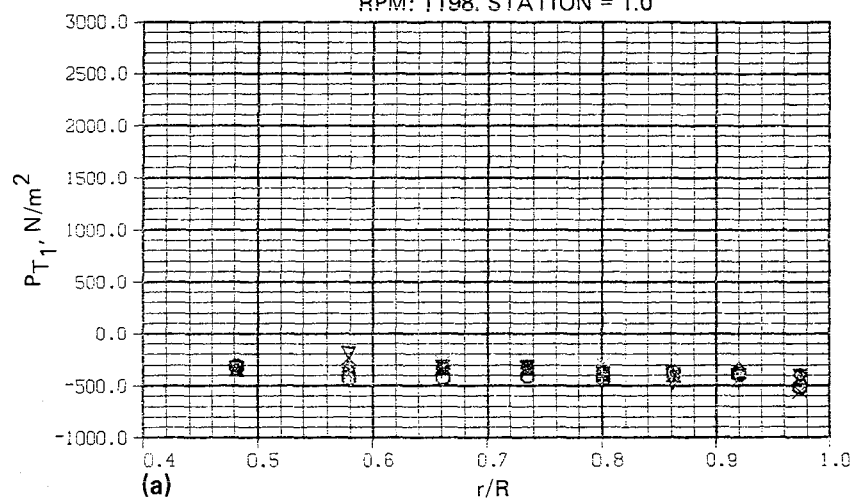
Figure 52.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

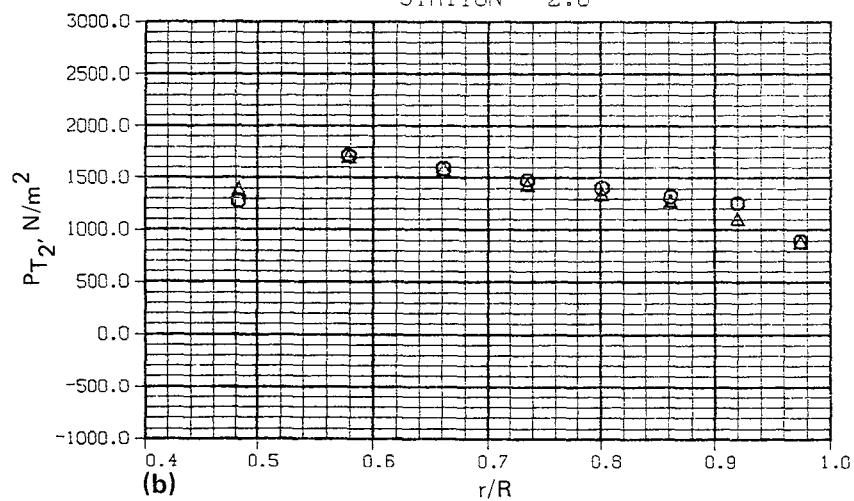
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 324. MASS FLOW: 0.00 slugs/sec

RPM: 1198. STATION = 1.0



STATION = 2.0



STATION = 3.0

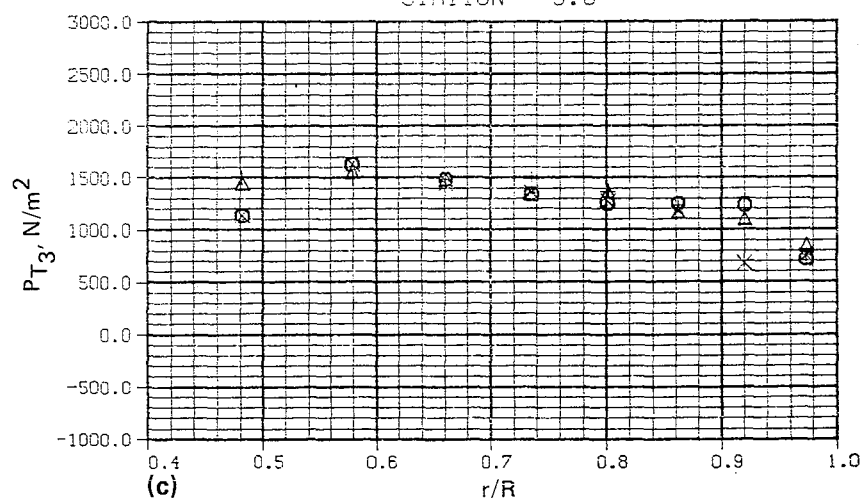


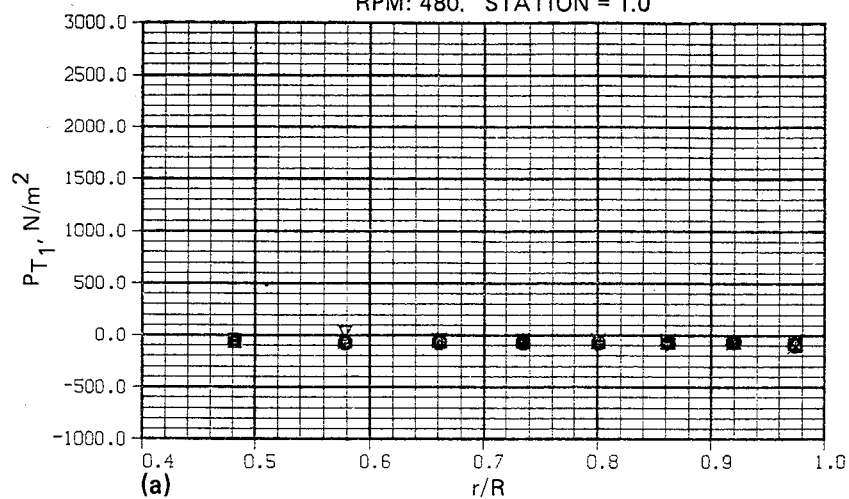
Figure 53.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

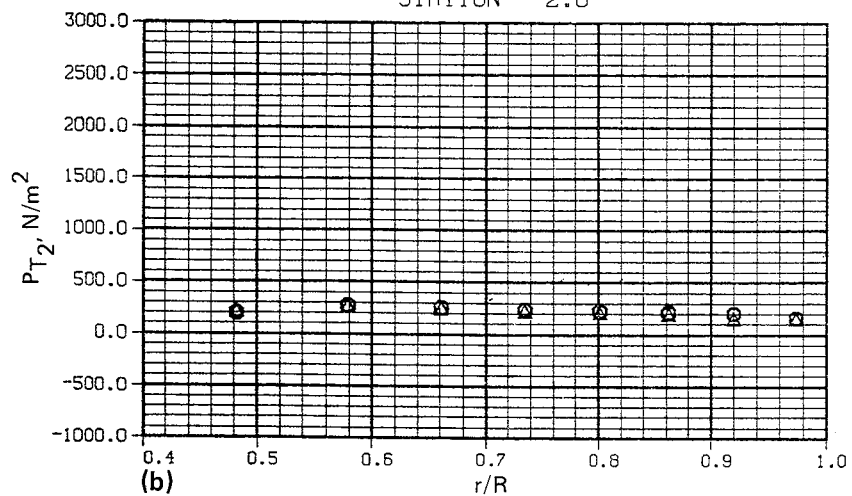
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 425. MASS FLOW: 58.81 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

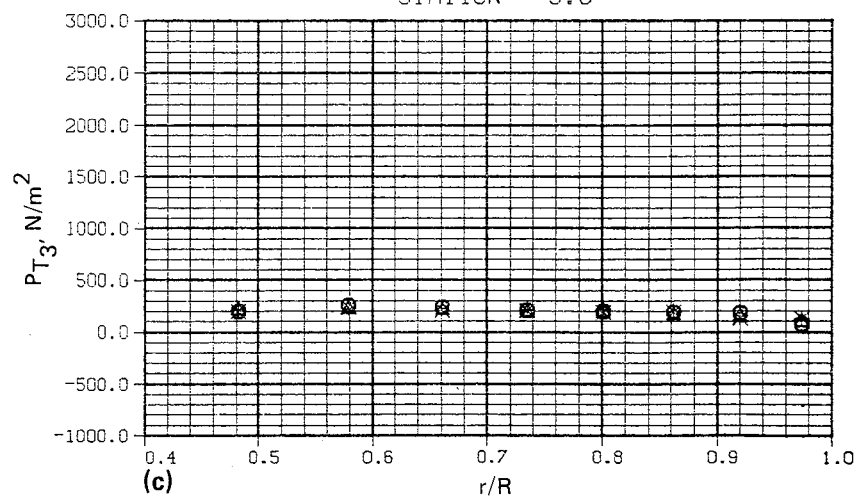


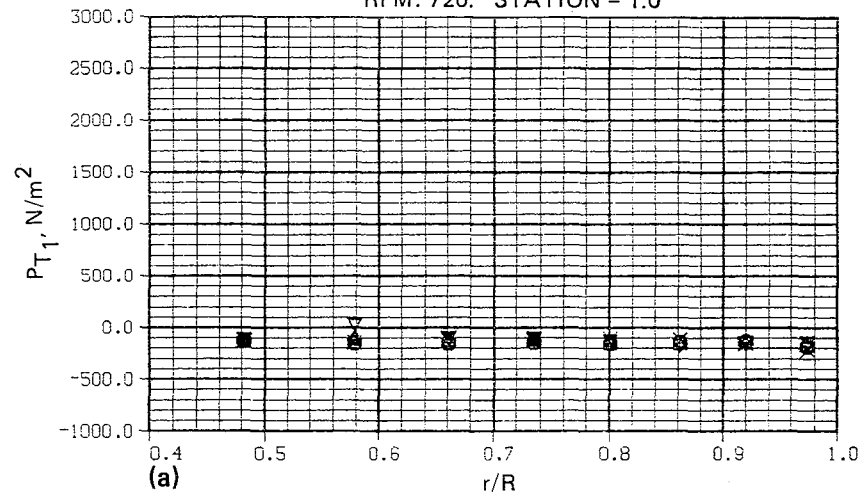
Figure 54.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

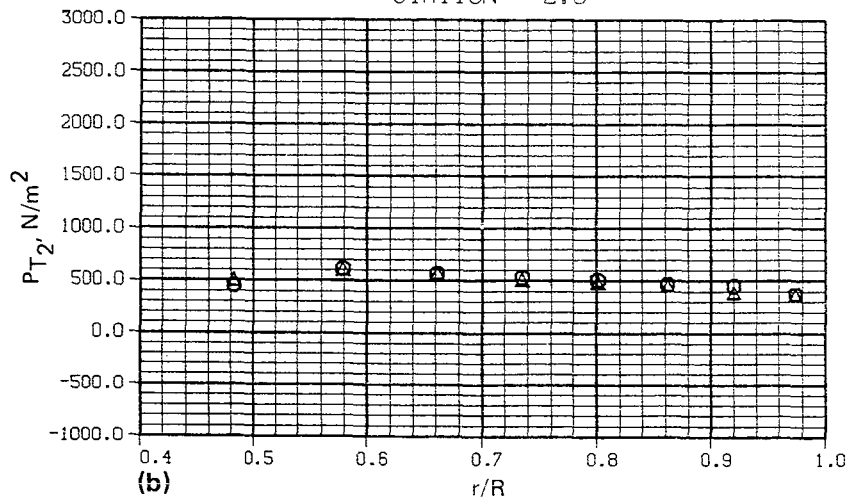
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 426. MASS FLOW: 89.22 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

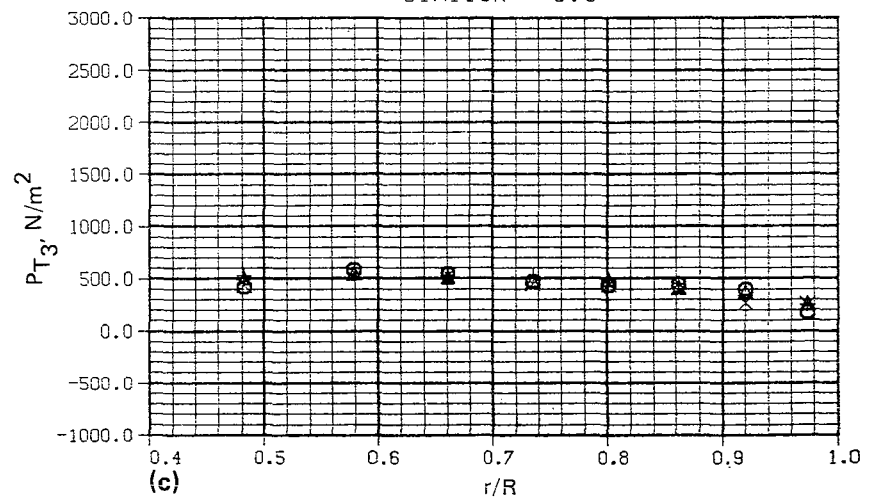


Figure 55.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 428. MASS FLOW: 105.59 slugs/sec

RPM: 1200. STATION = 1.0

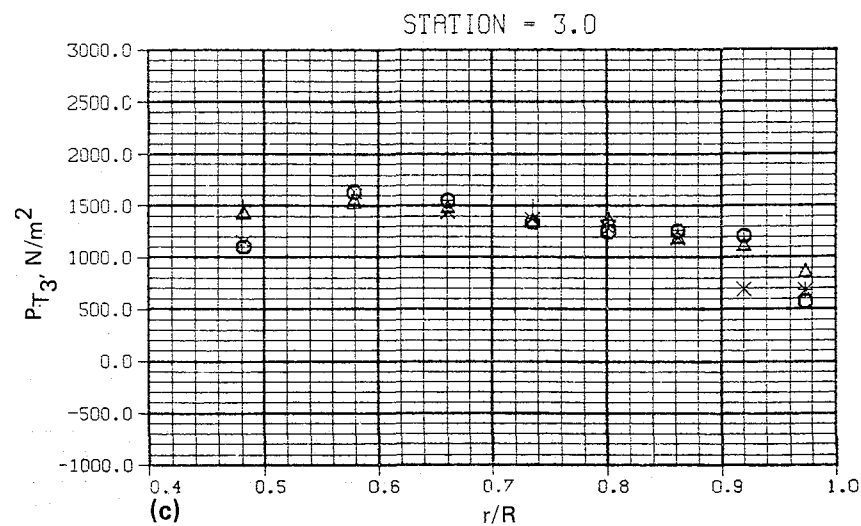
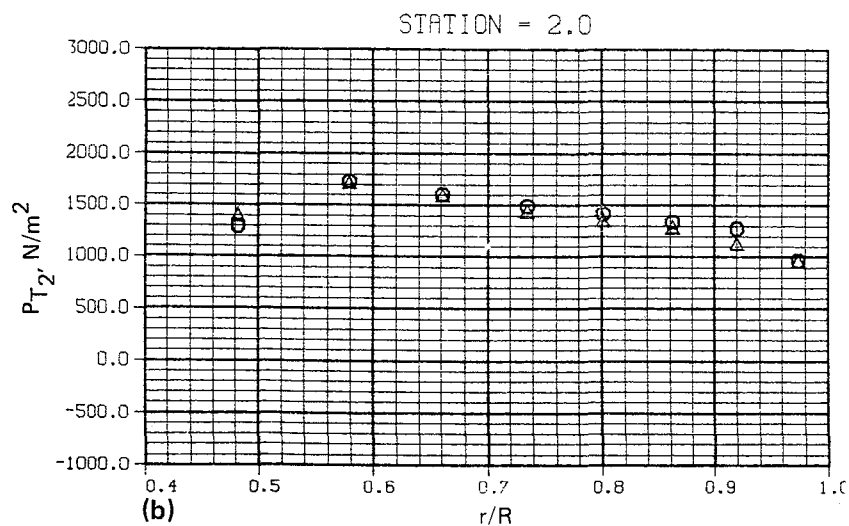
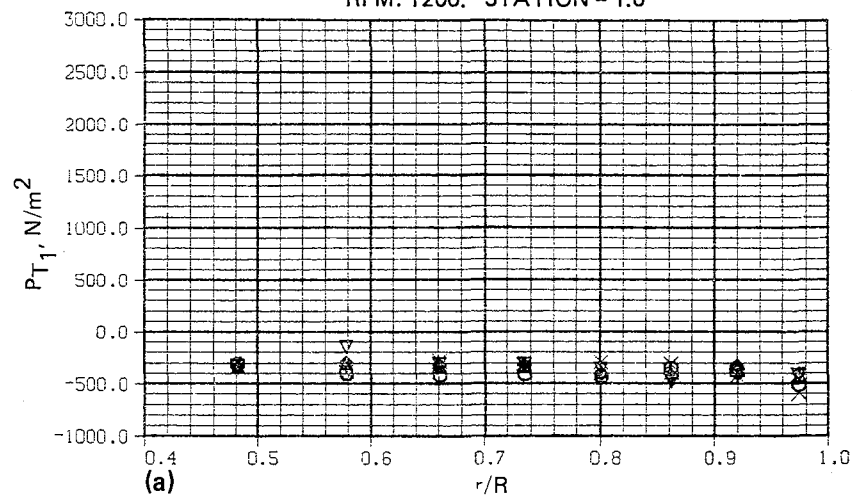


Figure 56.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 219. MASS FLOW: 68.53 slugs/sec

RPM: 480. STATION = 1.0

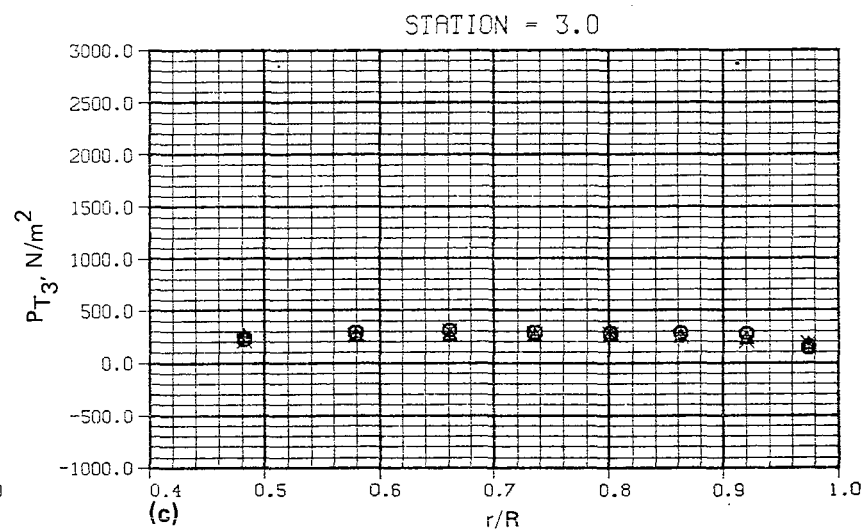
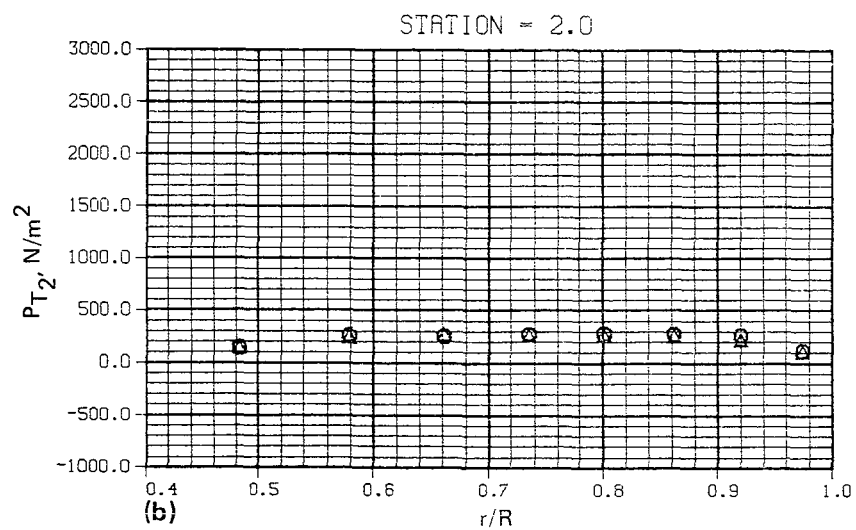
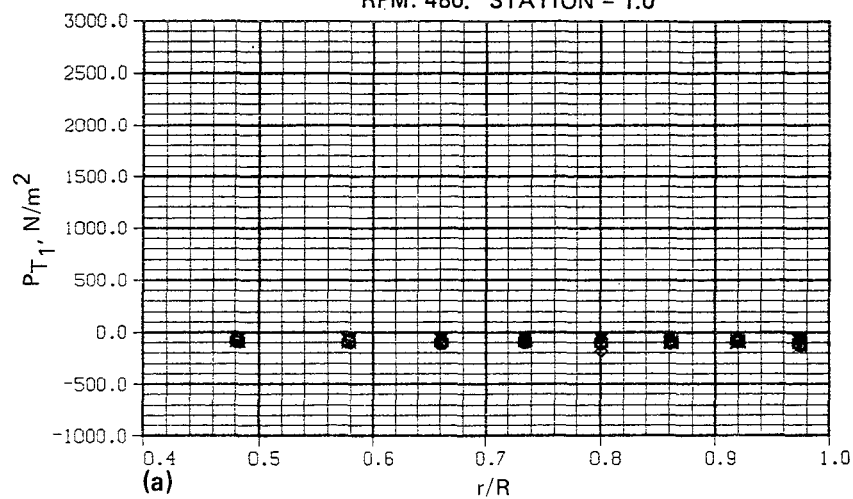


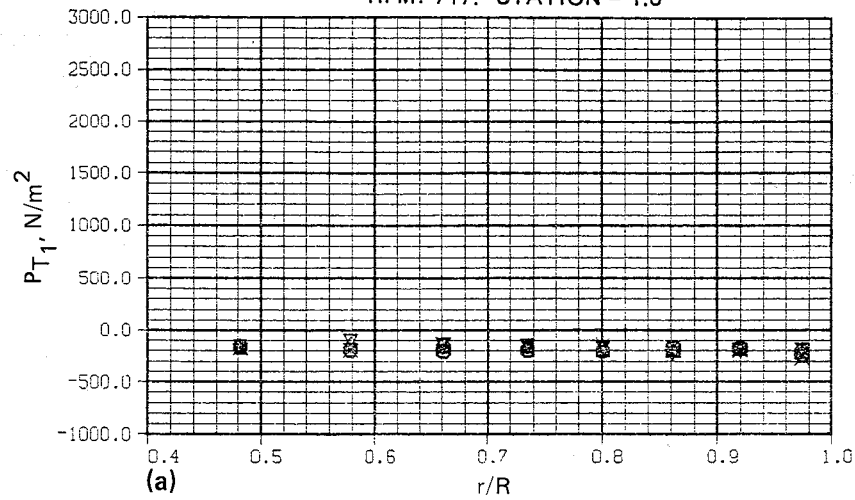
Figure 57.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

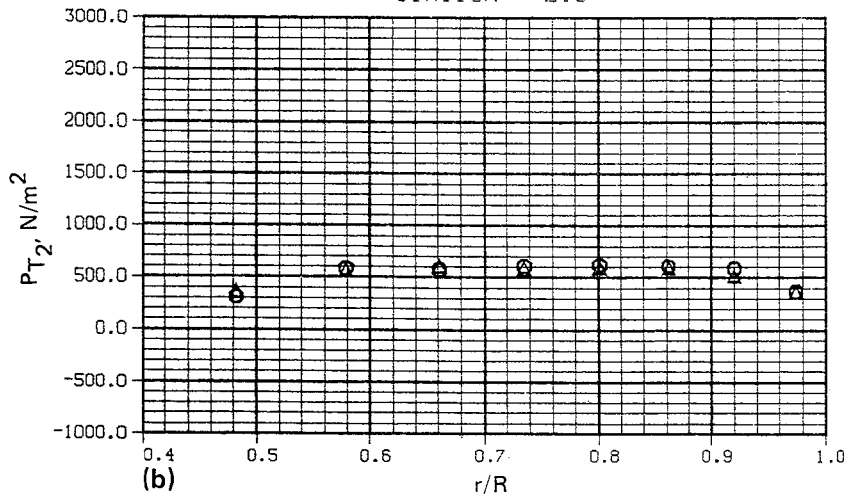
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 221. MASS FLOW: 103.34 slugs/sec

RPM: 717. STATION = 1.0



STATION = 2.0



STATION = 3.0

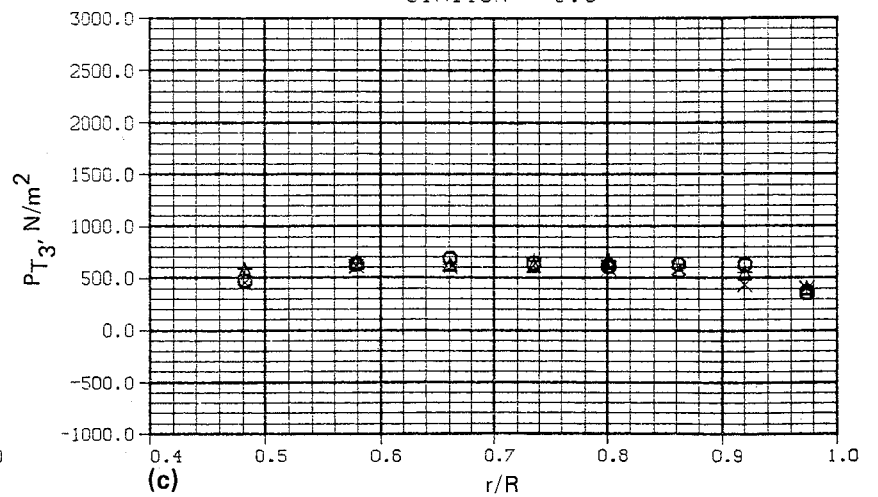


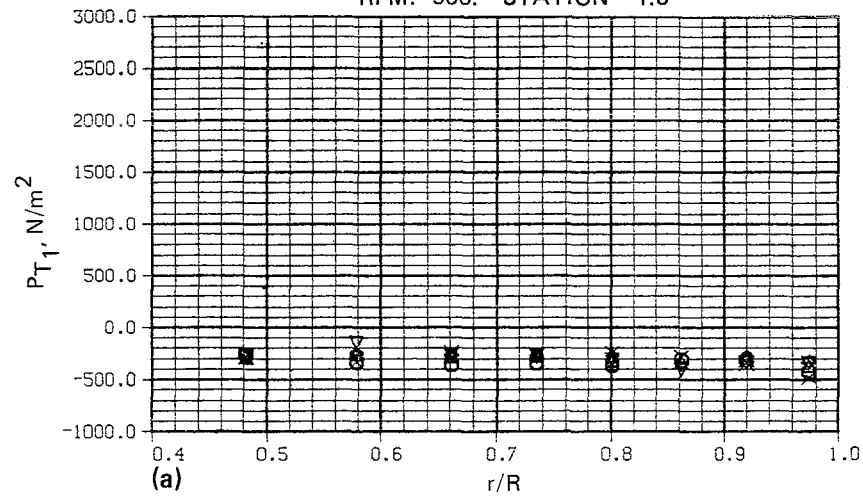
Figure 58.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

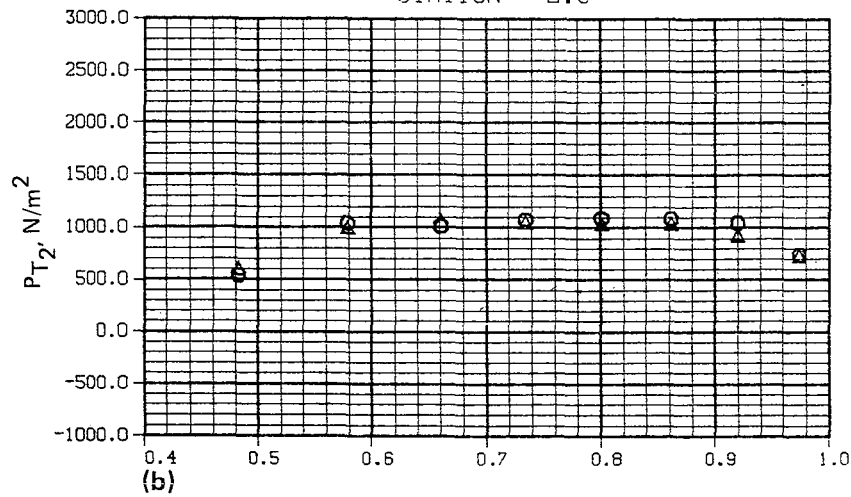
BLADE TYPE: 2. BLADE ANGLE: 41.2.

RUN NO: 223. MASS FLOW: 138.56 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

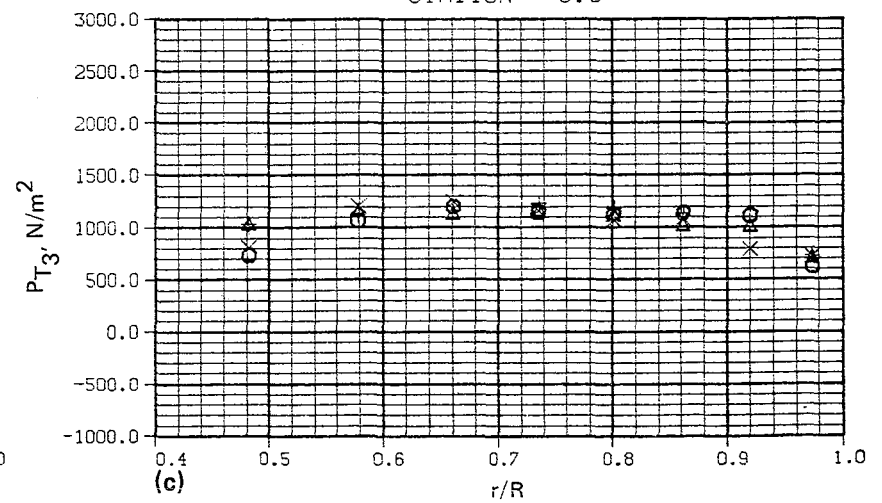


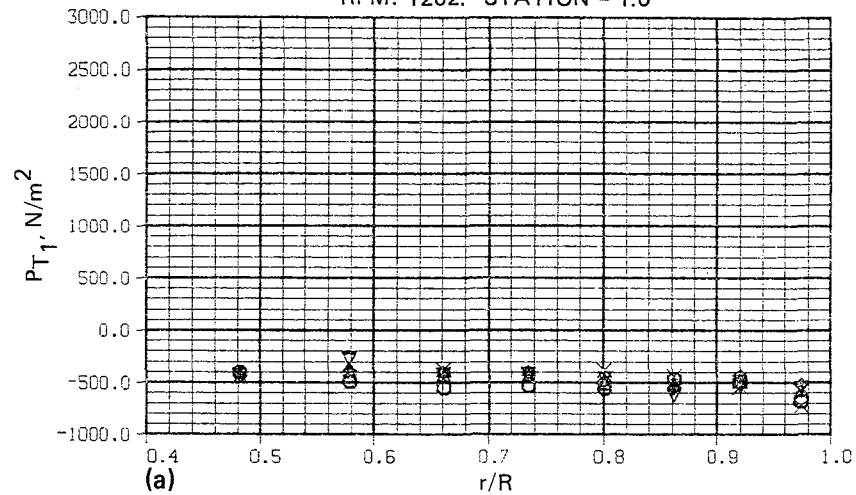
Figure 59.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

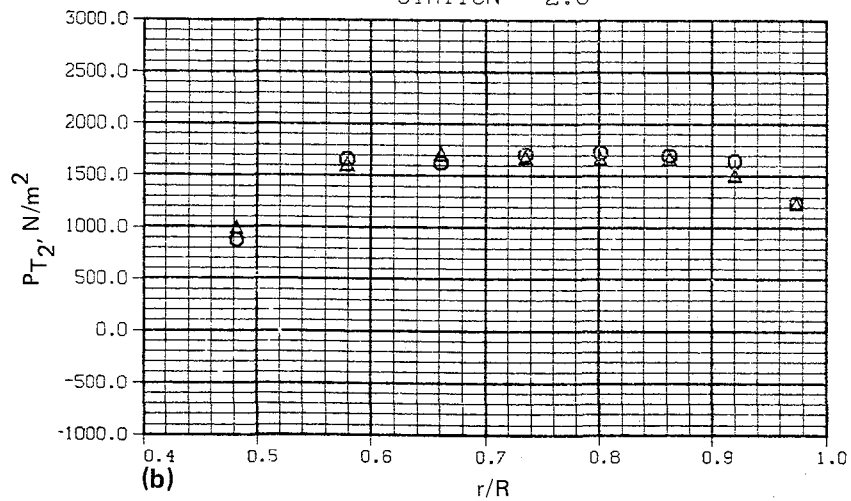
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 224, MASS FLOW: 174.22 slugs/sec

RPM: 1202. STATION = 1.0



STATION = 2.0



STATION = 3.0

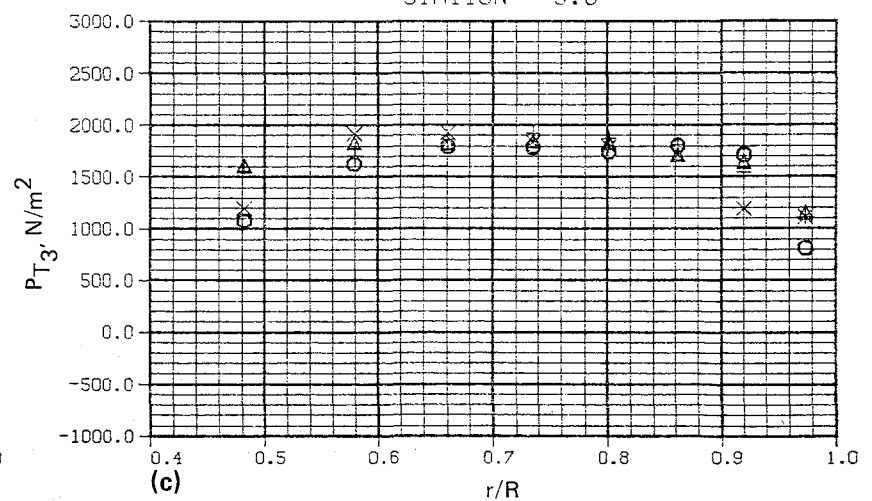


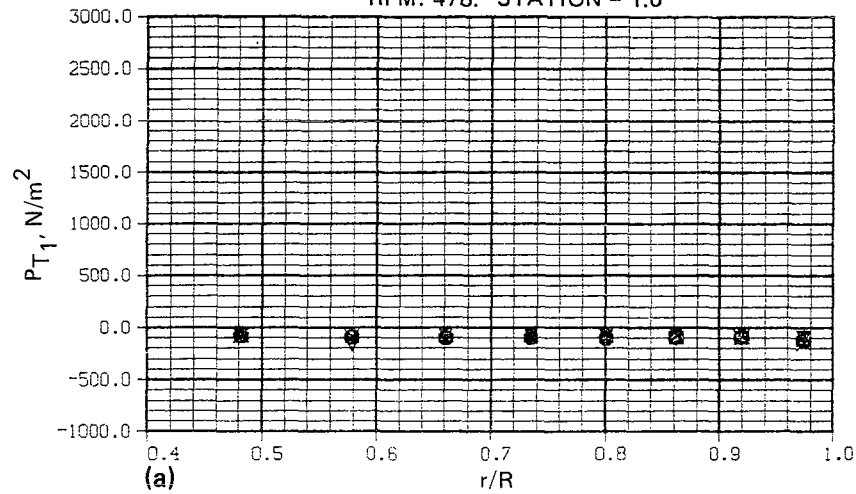
Figure 60.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

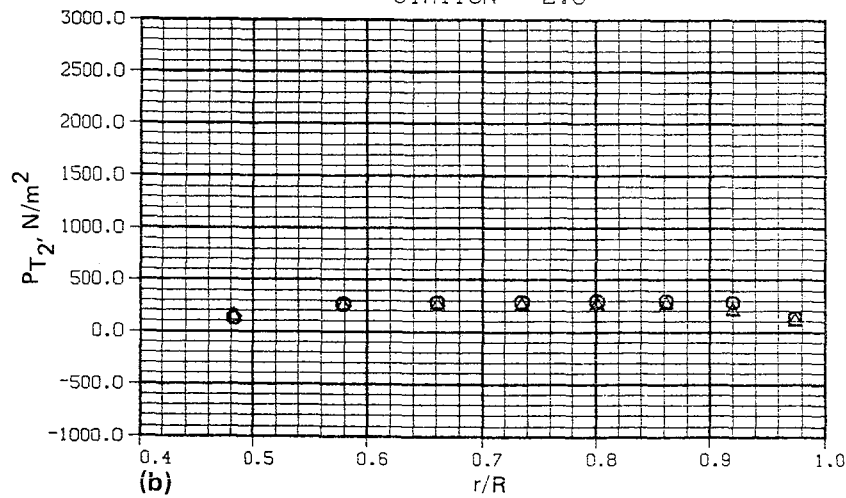
BLADE TYPE: 2. BLADE ANGLE: 69.58

RUN NO: 249. MASS FLOW: 92.49 slugs/sec

RPM: 478. STATION = 1.0



STATION = 2.0



STATION = 3.0

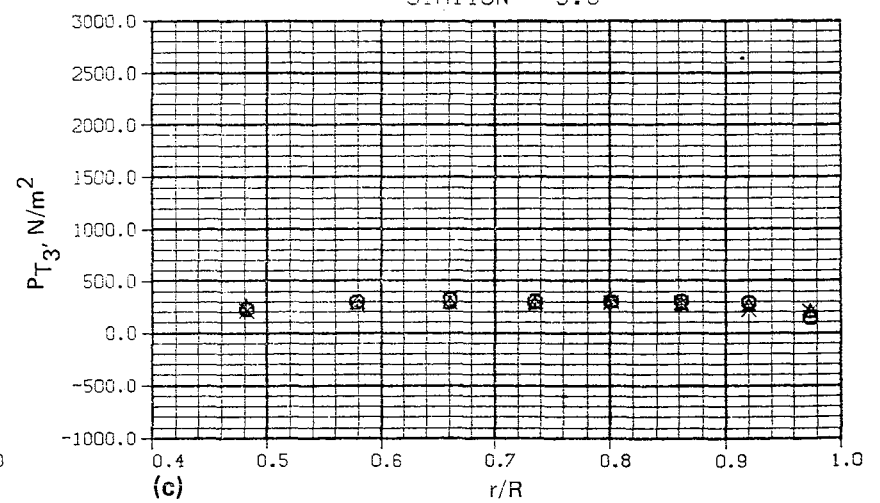


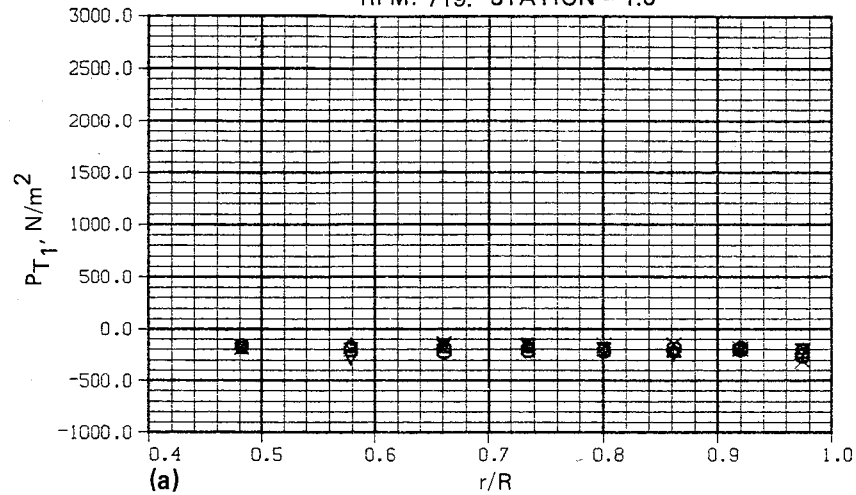
Figure 61.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

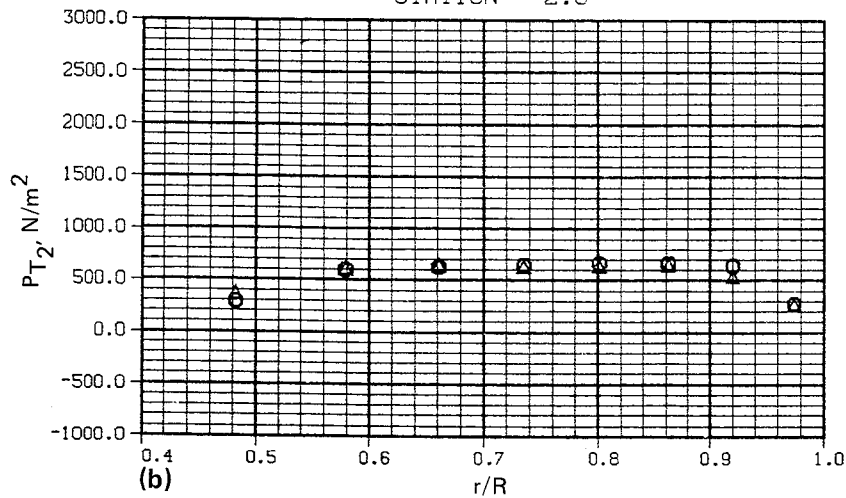
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 250. MASS FLOW: 105.76 slugs/sec

RPM: 719. STATION = 1.0



STATION = 2.0



STATION = 3.0

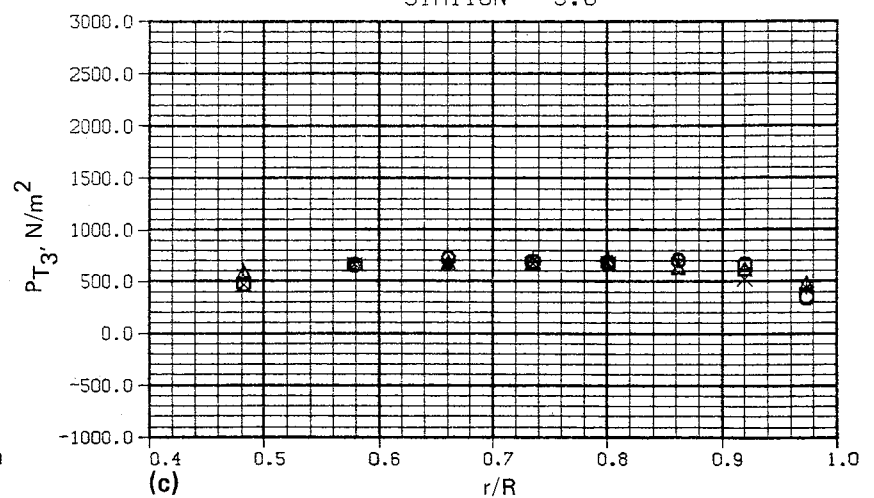
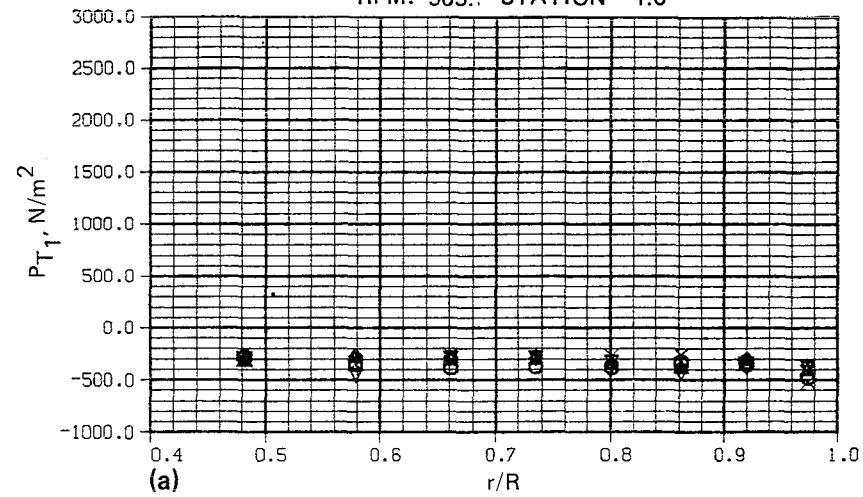
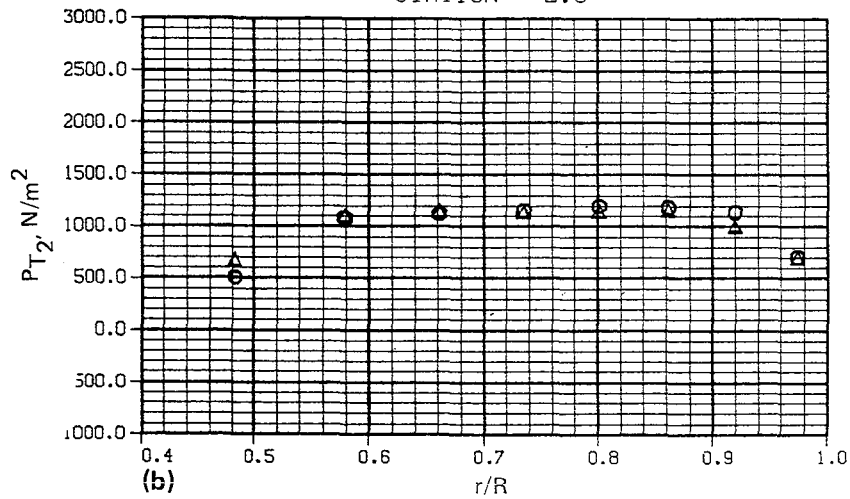


Figure 62.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 251. MASS FLOW: 142.72 slugs/sec
 RPM: 965.. STATION = 1.0



STATION = 2.0



STATION = 3.0

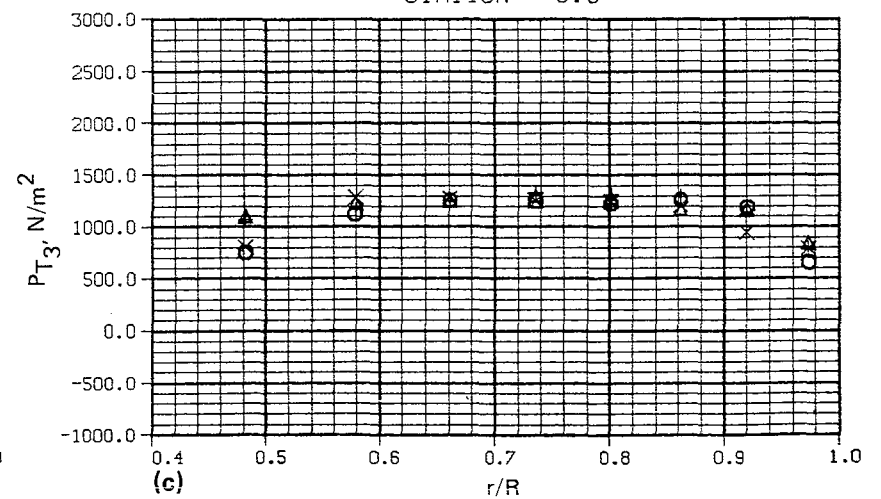


Figure 63.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 252. MASS FLOW: 180.07 slugs/sec

RPM: 1205. STATION = 1.0

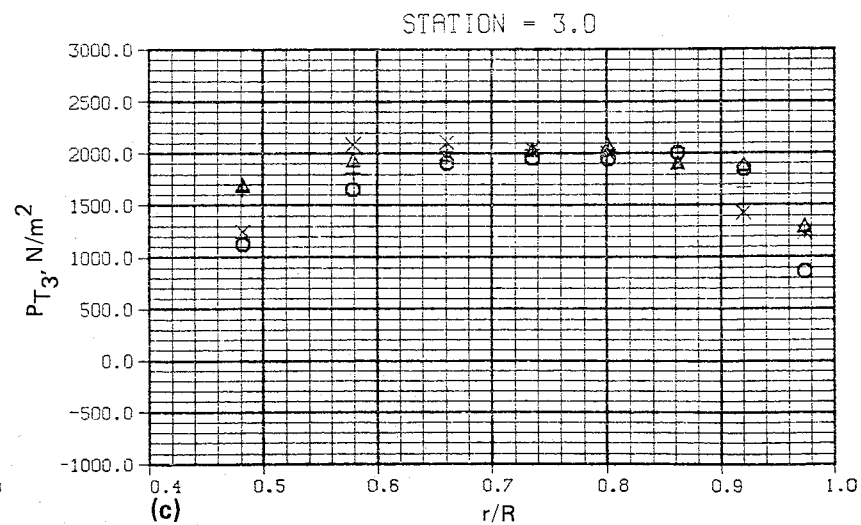
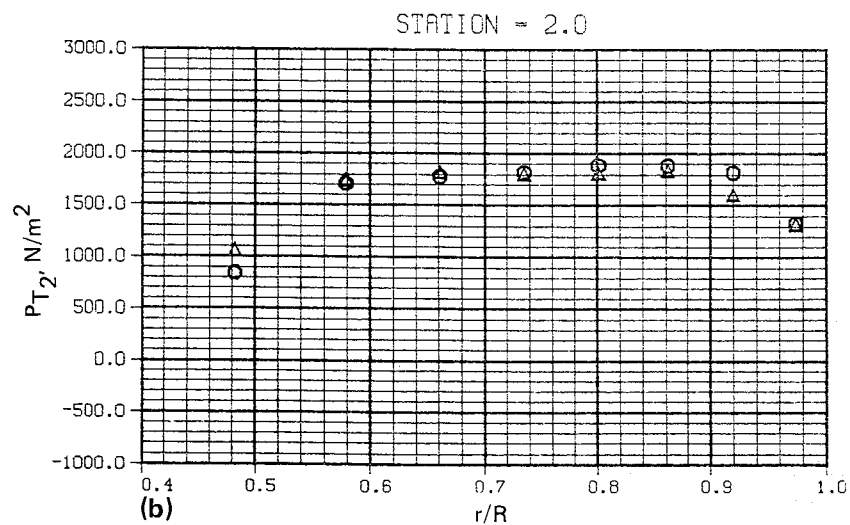
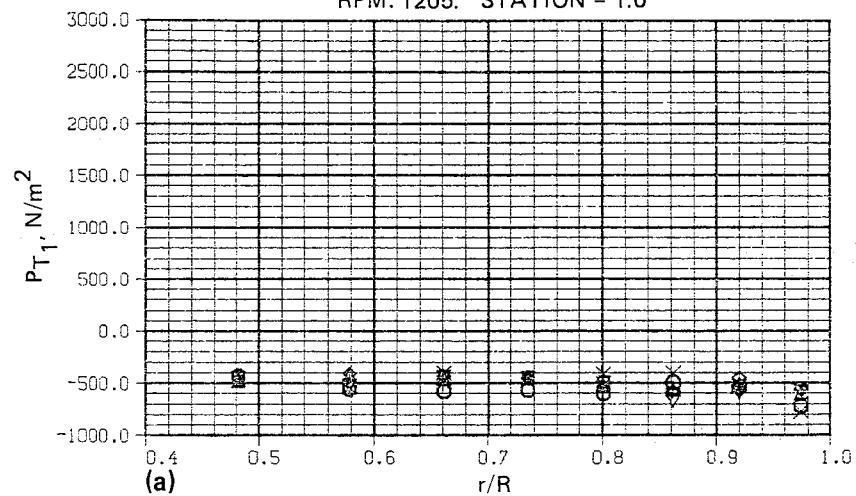


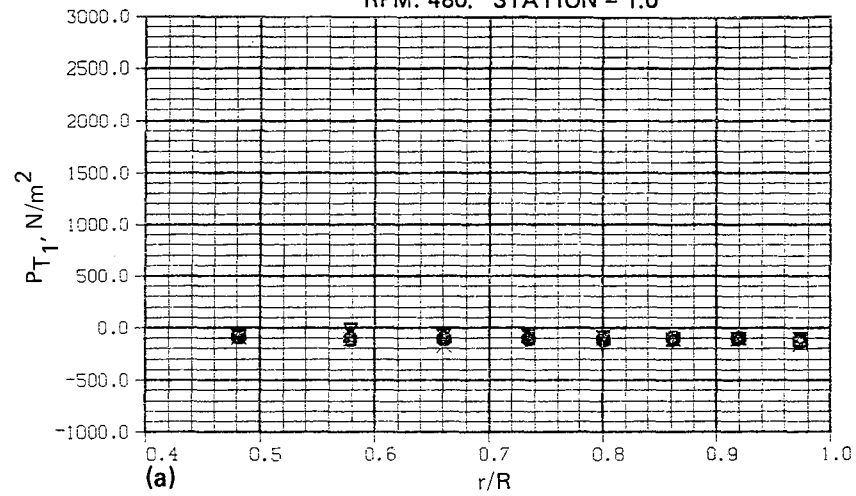
Figure 64.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

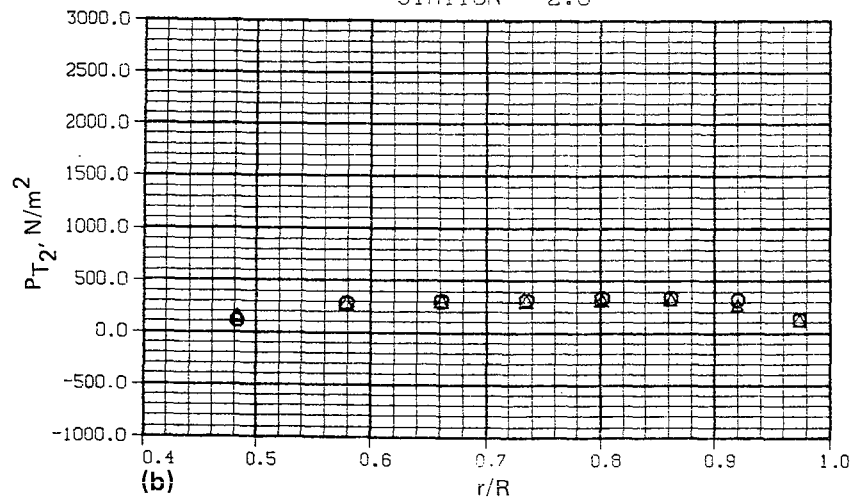
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 281. MASS FLOW: 75.19 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

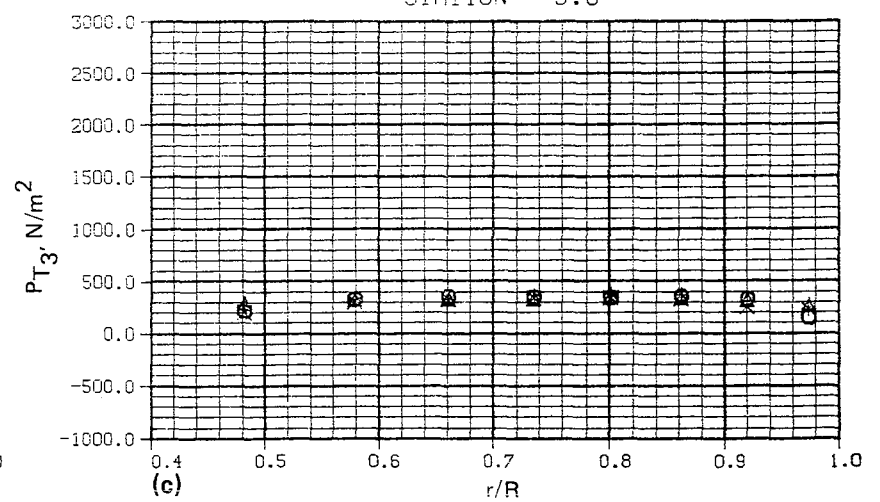


Figure 65.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 282. MASS FLOW: 114.76 slugs/sec

RPM: 723. STATION = 1.0

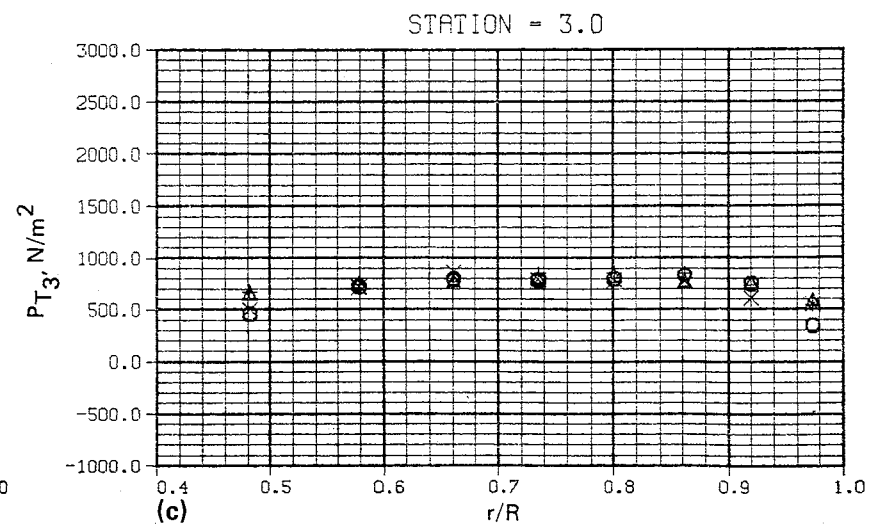
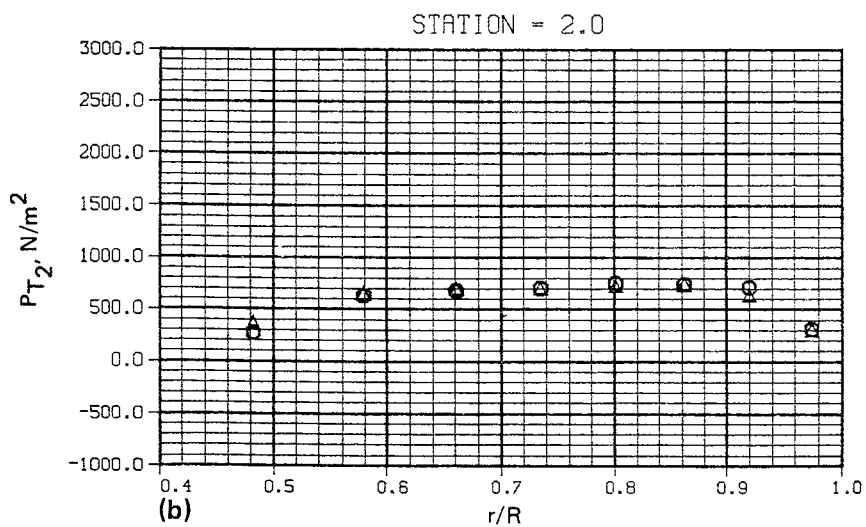
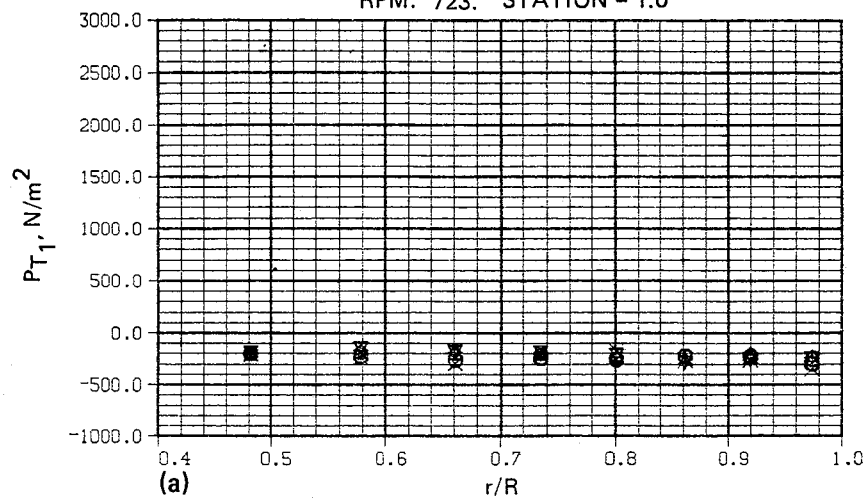


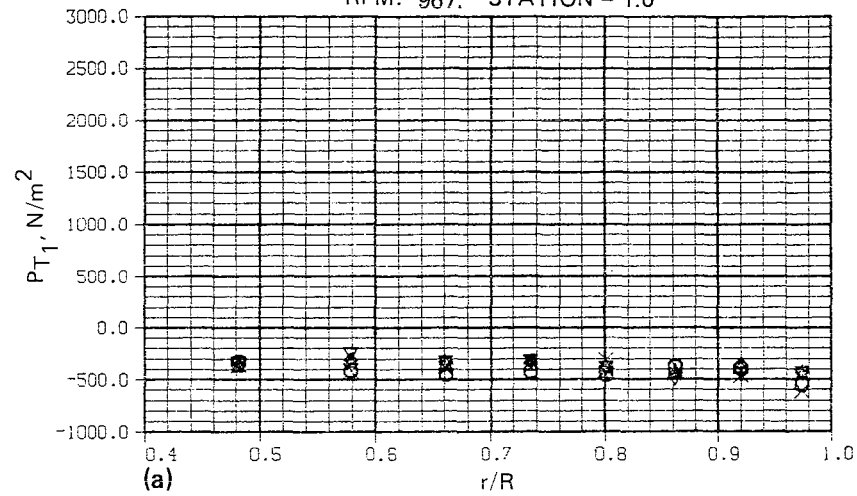
Figure 66.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

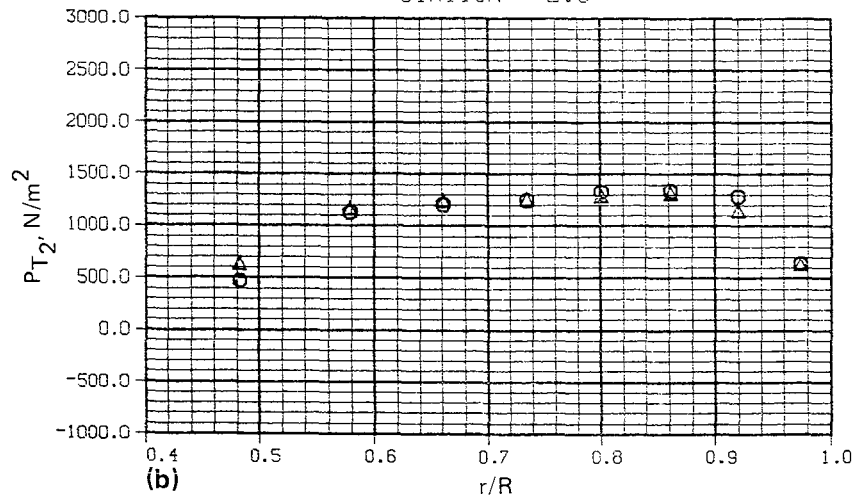
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 283. MASS FLOW: 154.54 slugs/sec

RPM: 967. STATION = 1.0



STATION = 2.0



STATION = 3.0

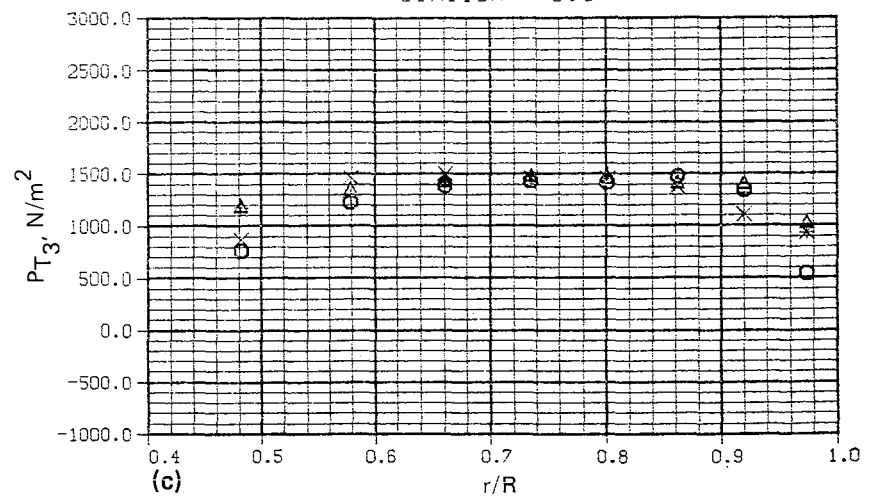


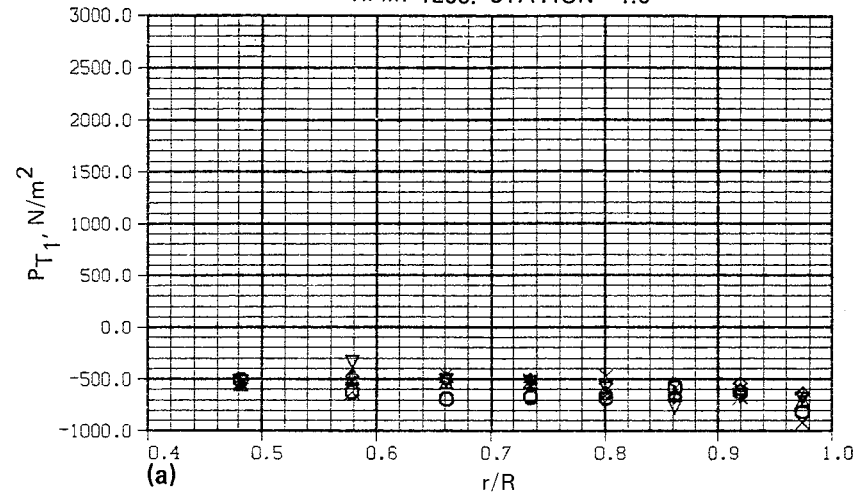
Figure 67.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

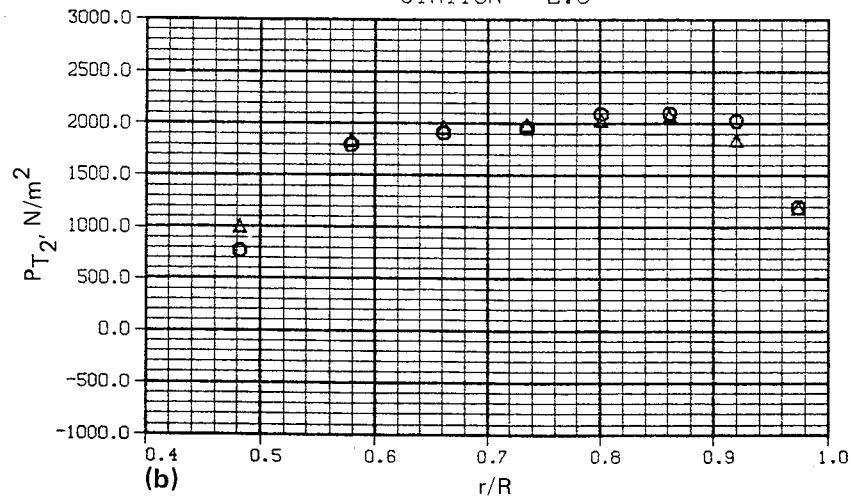
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 284. MASS FLOW: 195.04 slugs/sec

RPM: 1205. STATION = 1.0



STATION = 2.0



STATION = 3.0

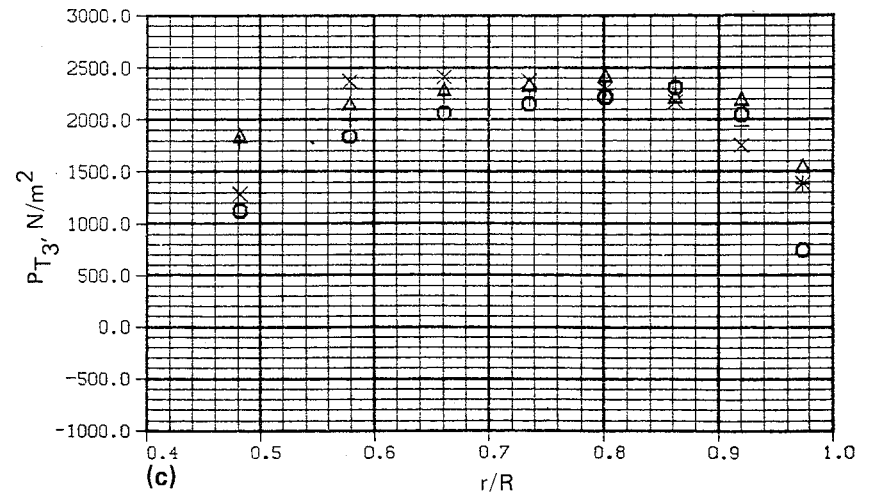


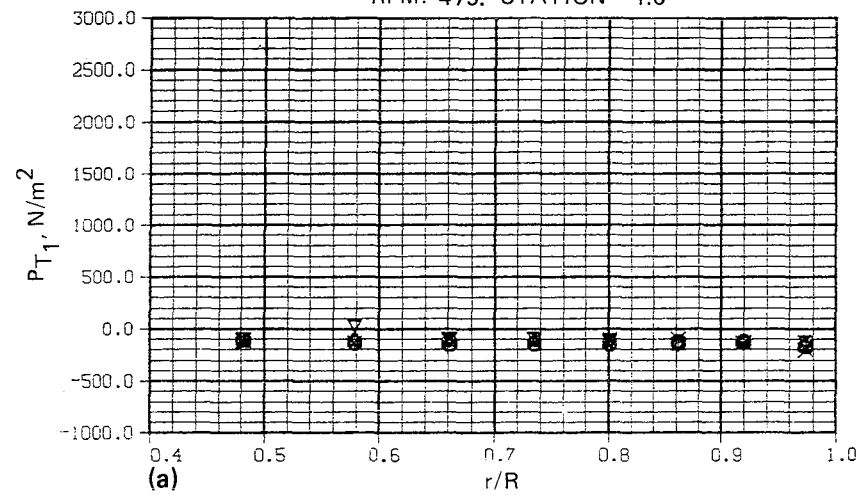
Figure 68.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

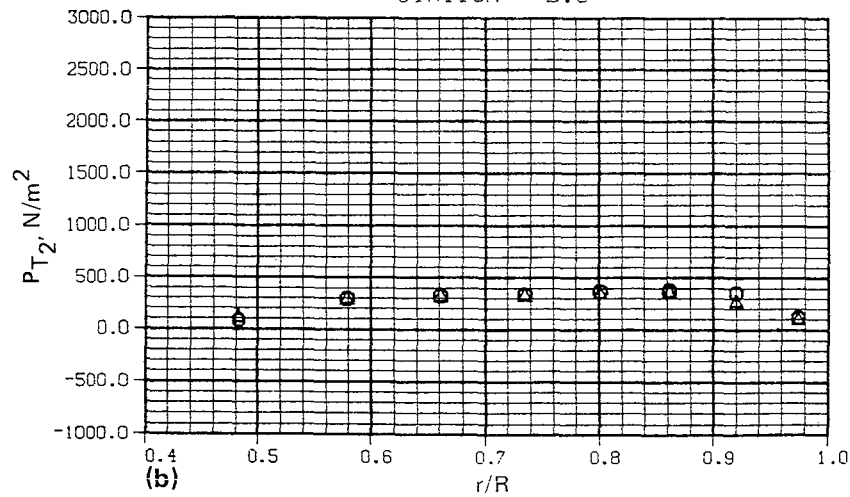
BLADE TYPE: 1. BLADE ANGLE: 53.4

RUN NO: 353. MASS FLOW: 85.61 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

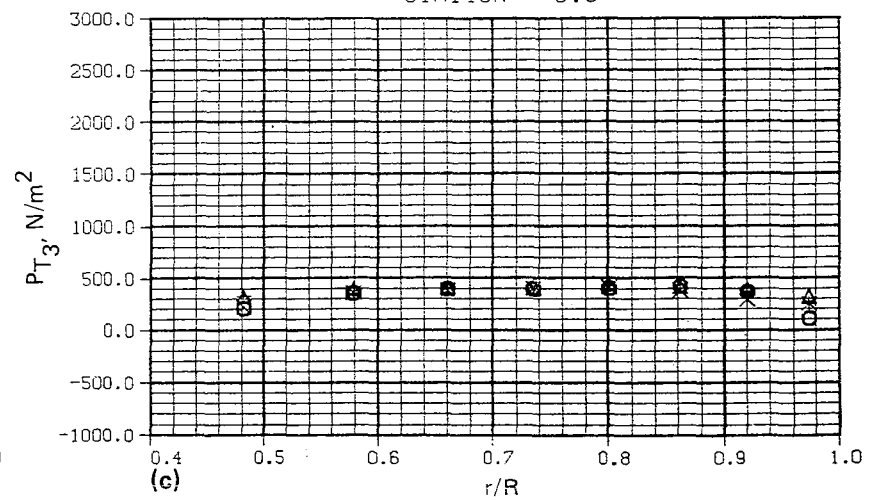


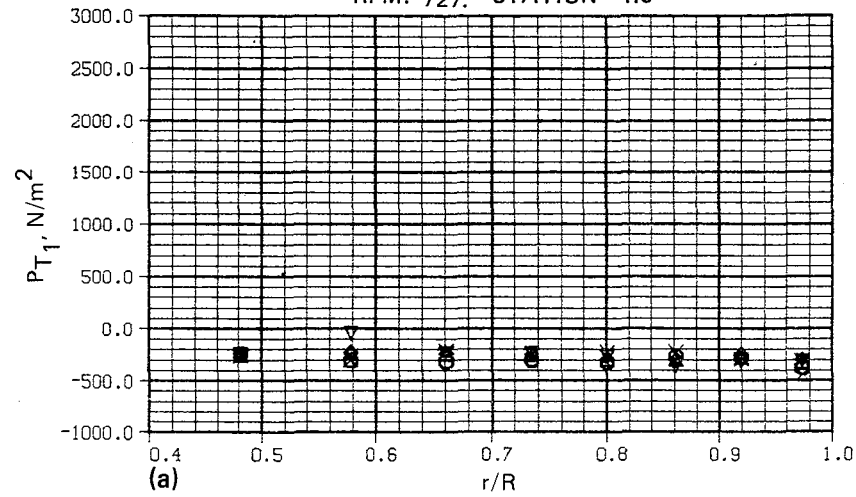
Figure 69.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

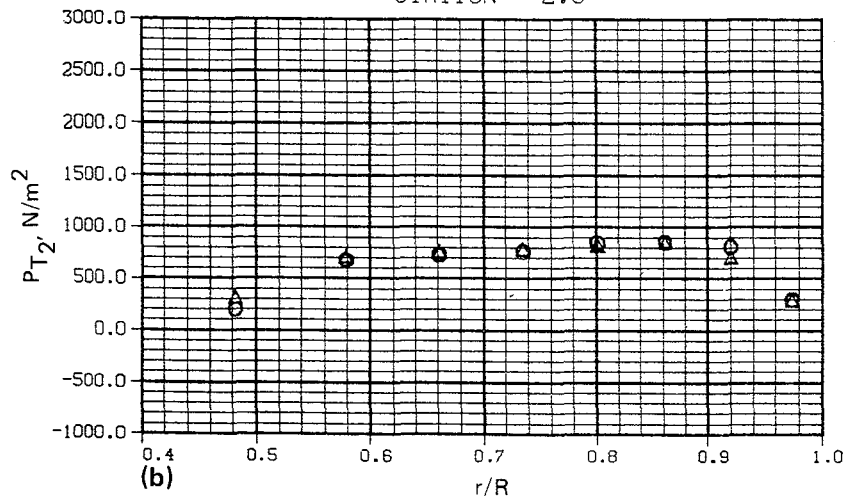
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 354. MASS FLOW: 130.36 slugs/sec

RPM: 727. STATION = 1.0



STATION = 2.0



STATION = 3.0

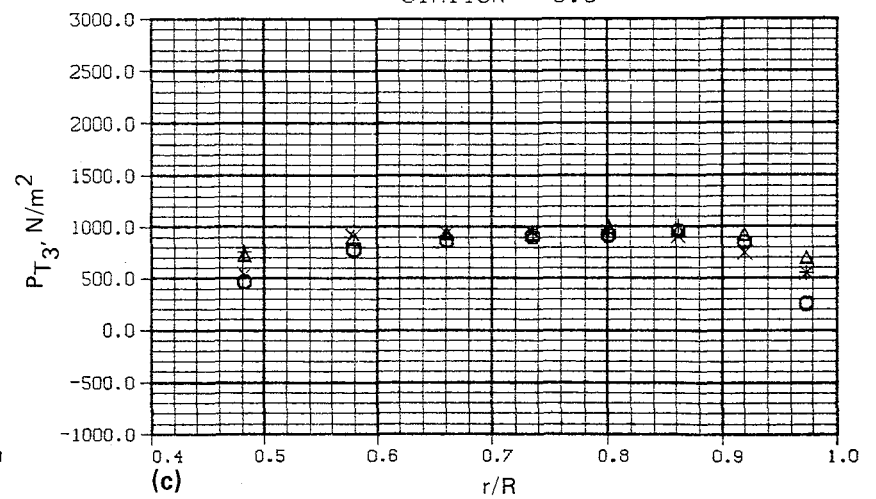


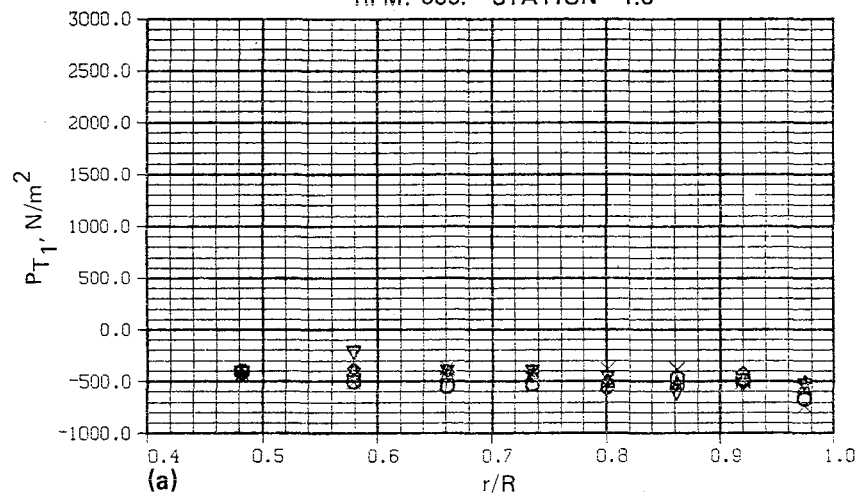
Figure 70.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

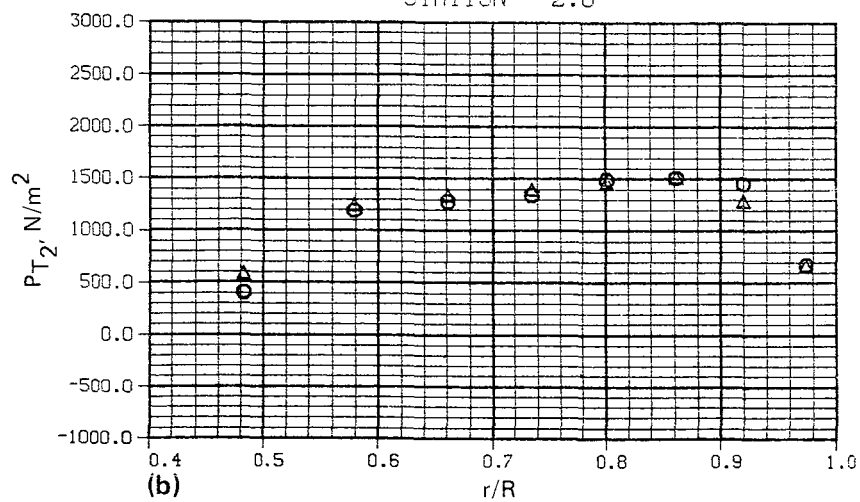
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 355. MASS FLOW: 173.80 slugs/sec

RPM: 965. STATION = 1.0



STATION = 2.0



STATION = 3.0

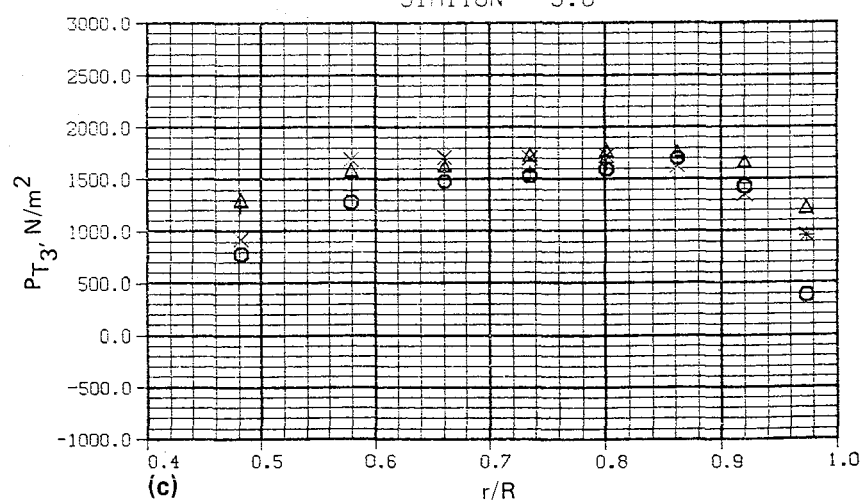


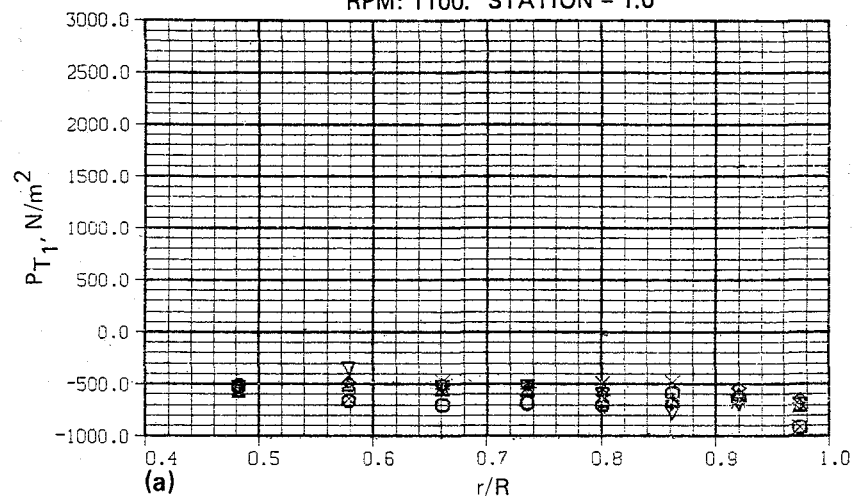
Figure 71.- Fan inlet velocities vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

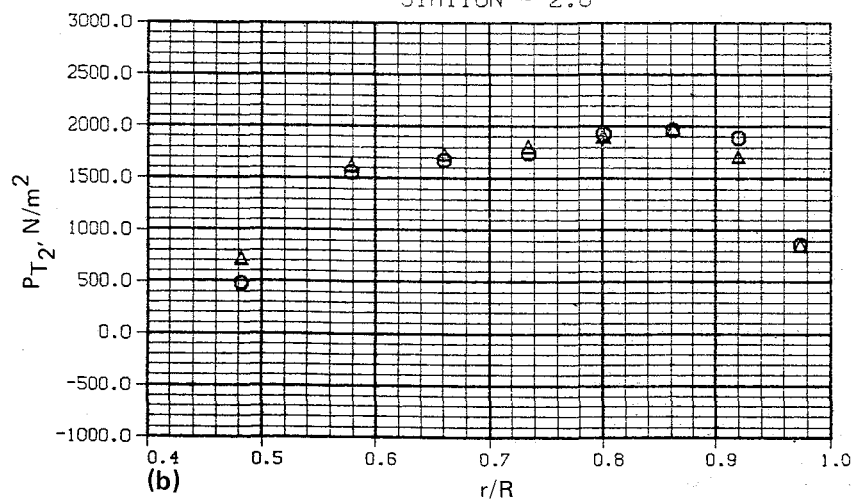
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 356. MASS FLOW: 197.99 slugs/sec

RPM: 1100. STATION = 1.0



STATION = 2.0



STATION = 3.0

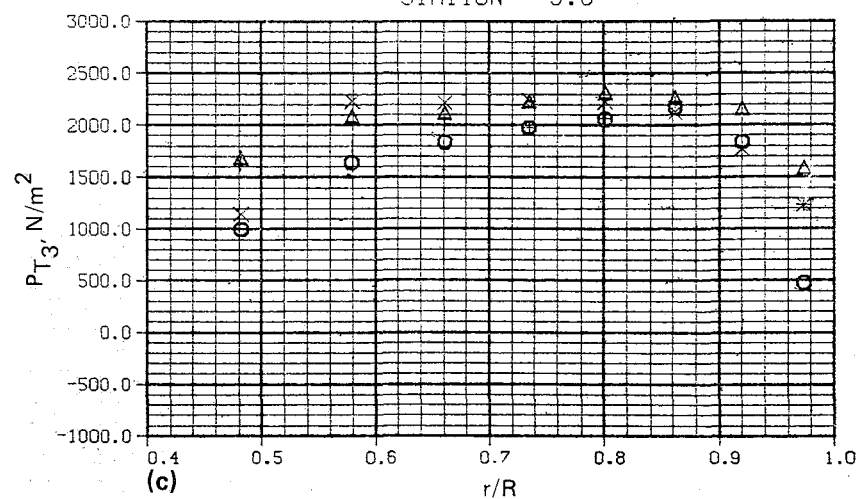


Figure 72.- Fan inlet velocities vs. radial distance.

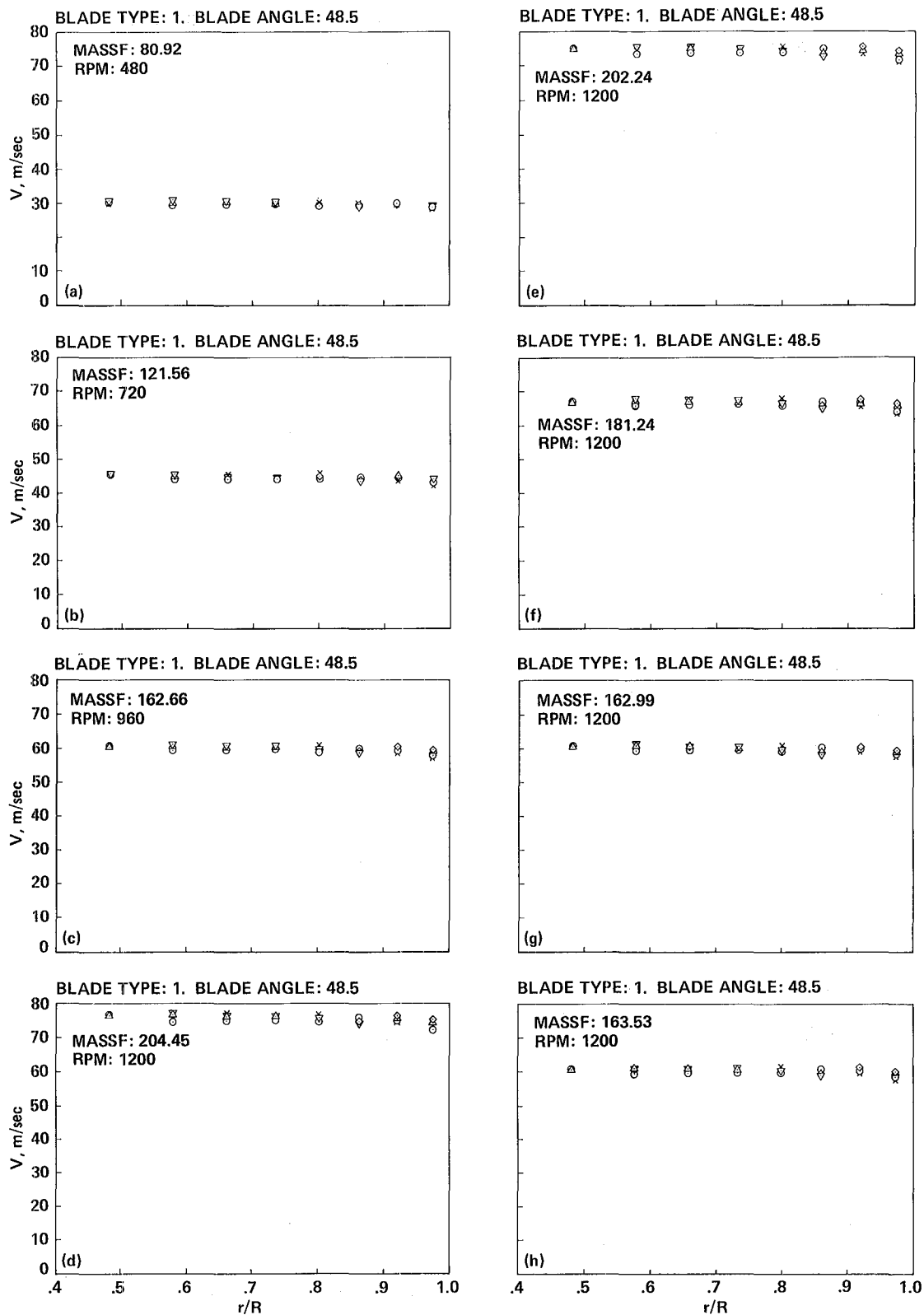


Figure 73.- Fan inlet velocities vs. radial distance.

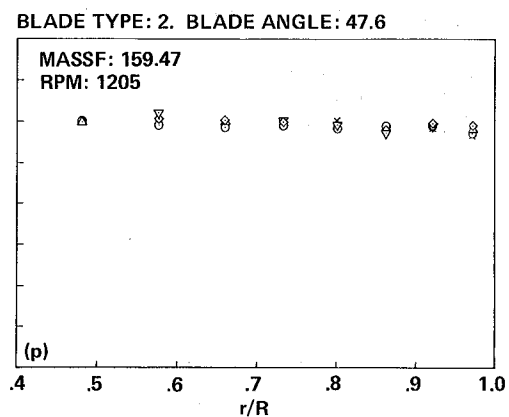
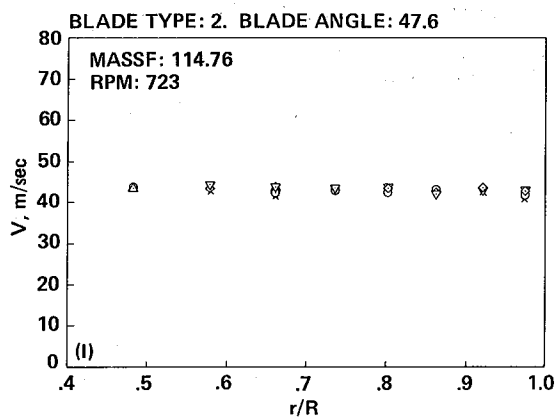
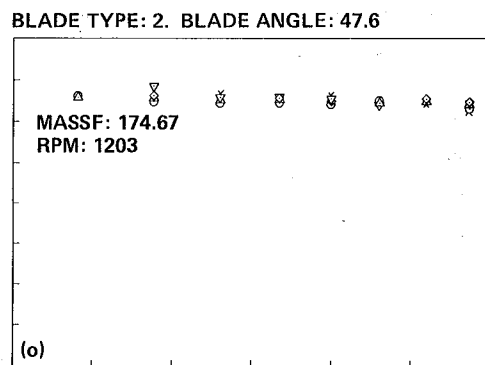
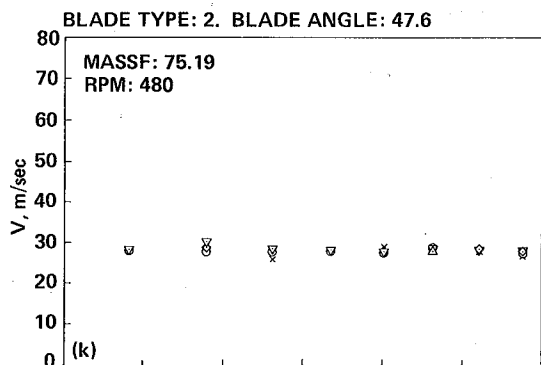
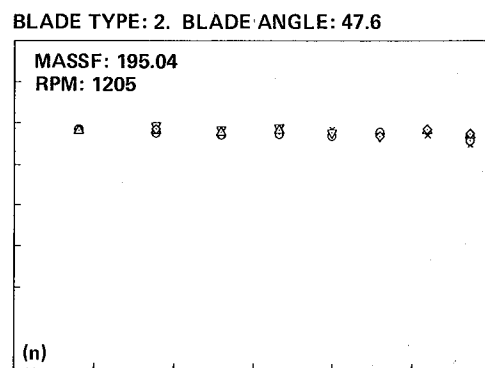
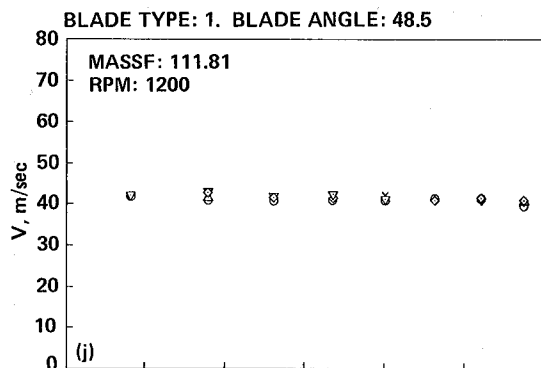
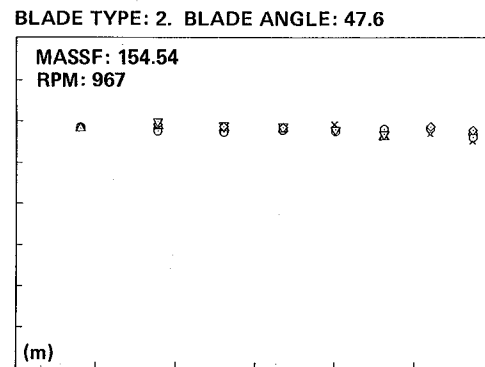
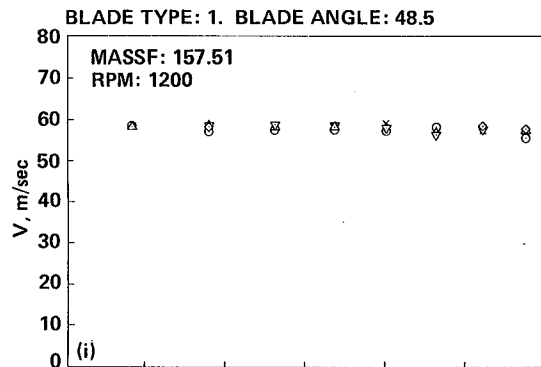


Figure 73.- Continued.

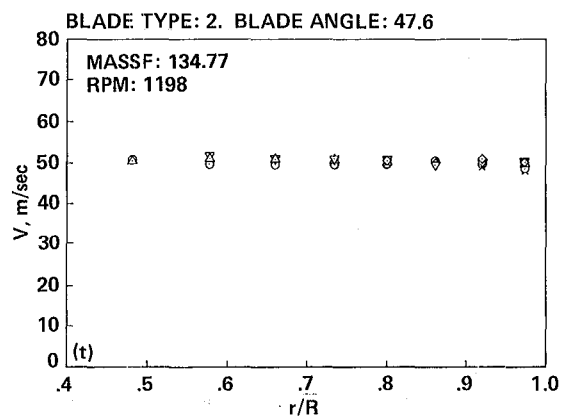
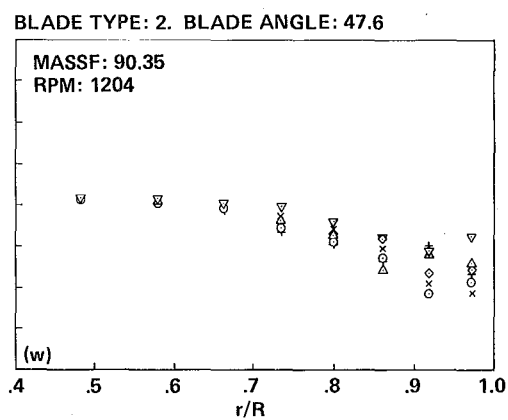
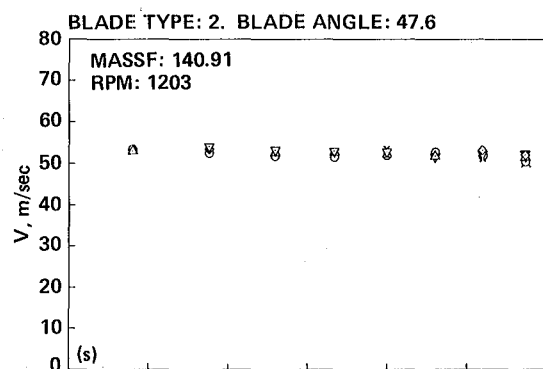
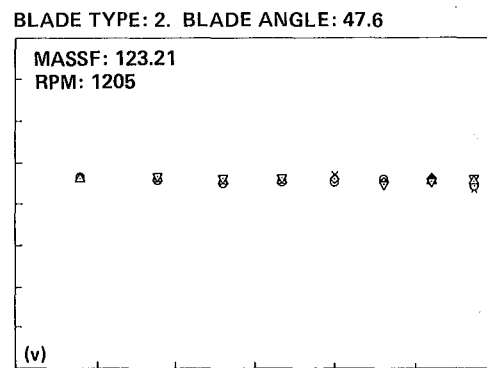
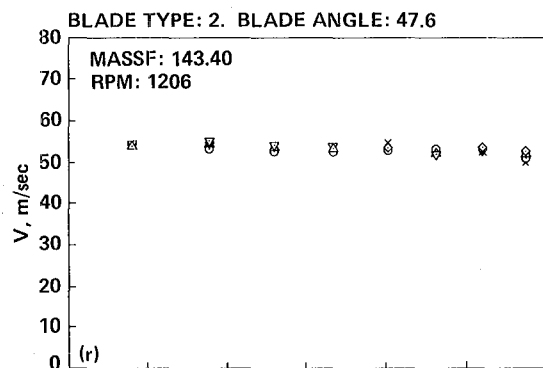
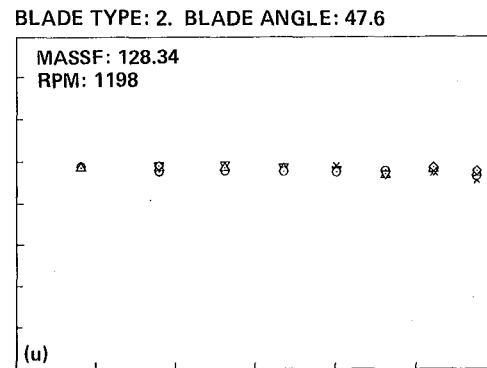
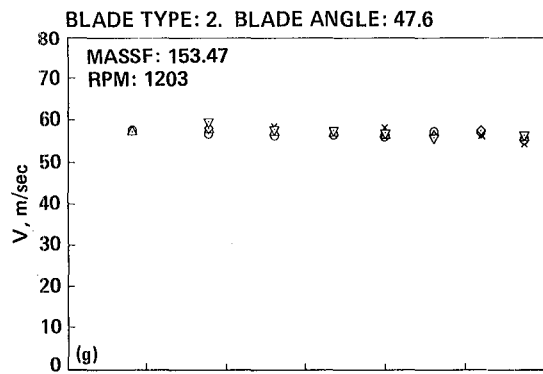


Figure 73.- Concluded.

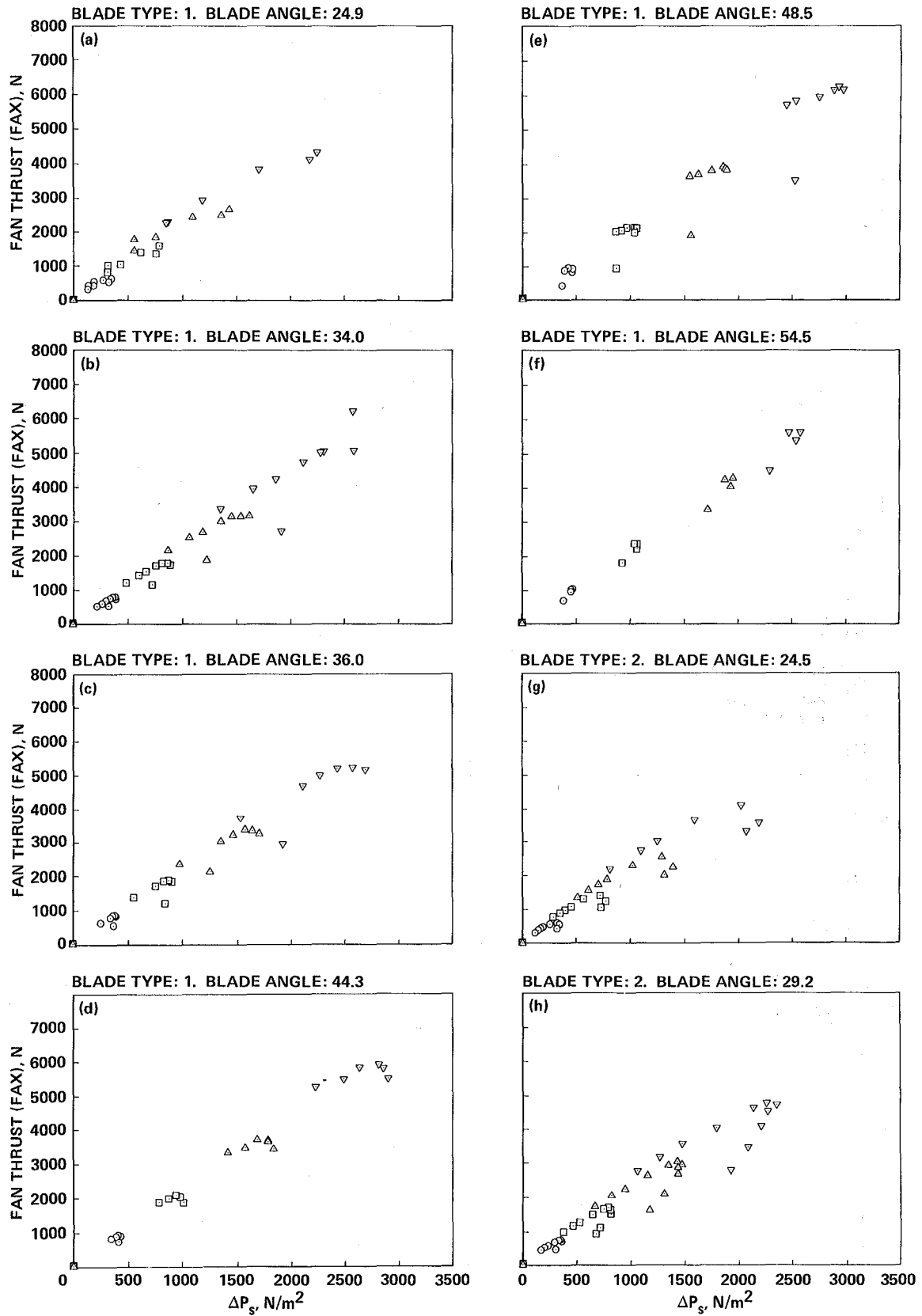


Figure 74.- Fan thrust vs. static pressure change across fan.

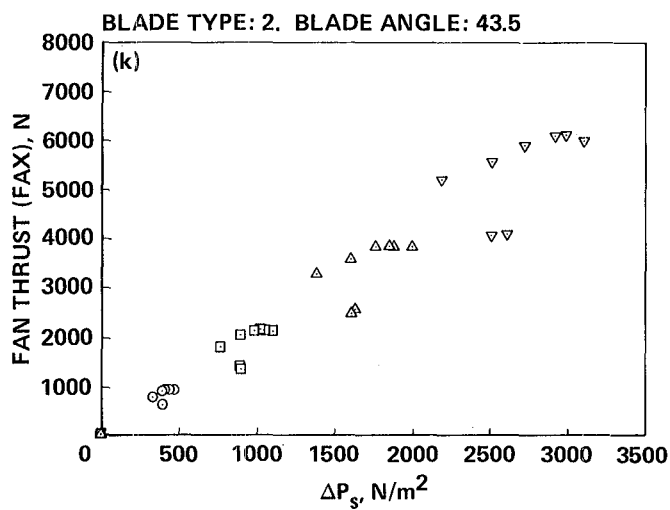
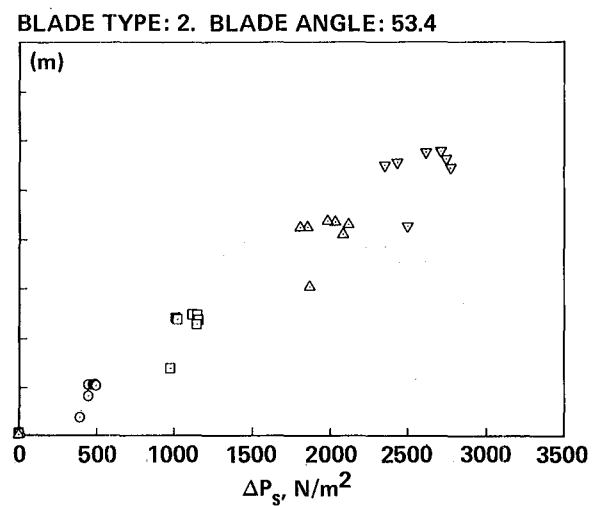
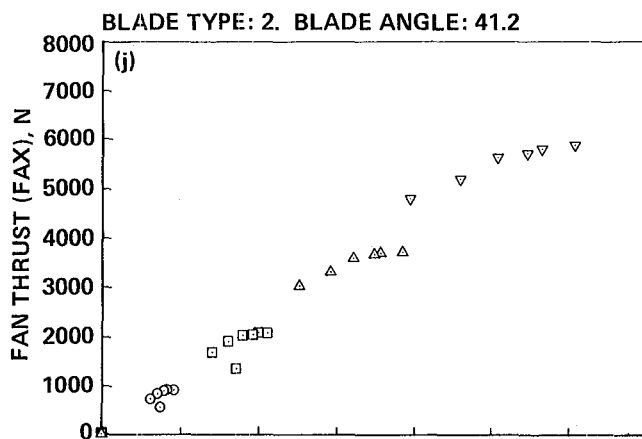
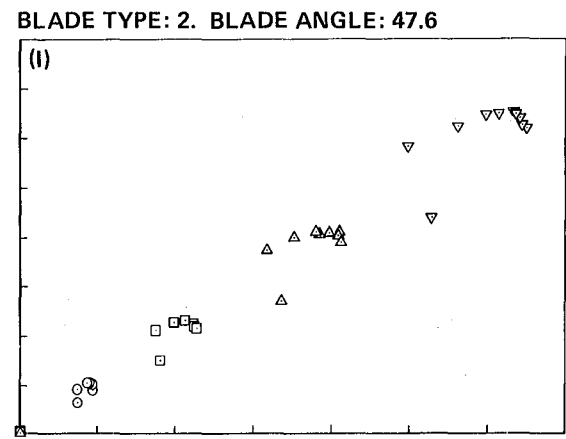
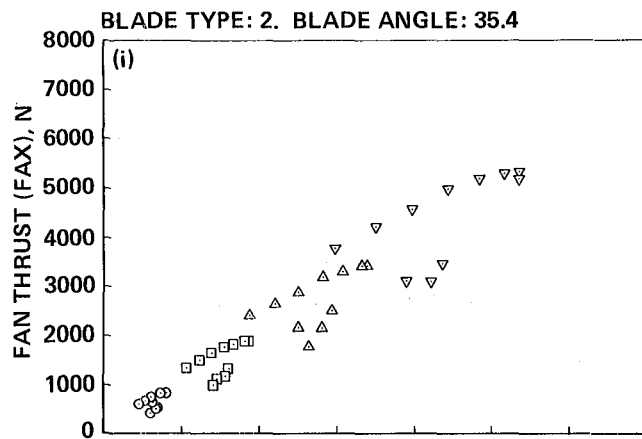


Figure 74.- Concluded.

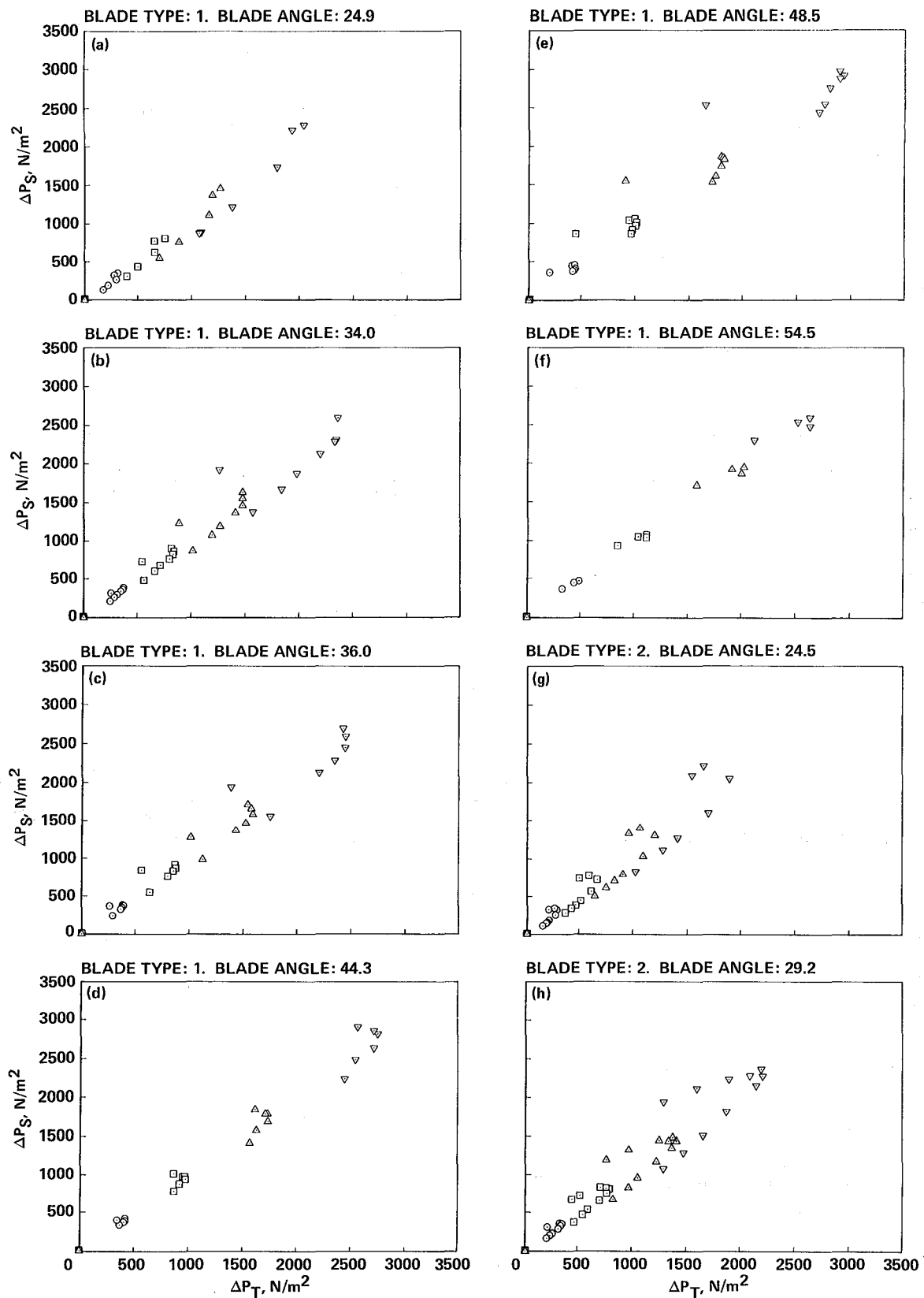


Figure 75.- Static pressure vs. total pressure change across fan.

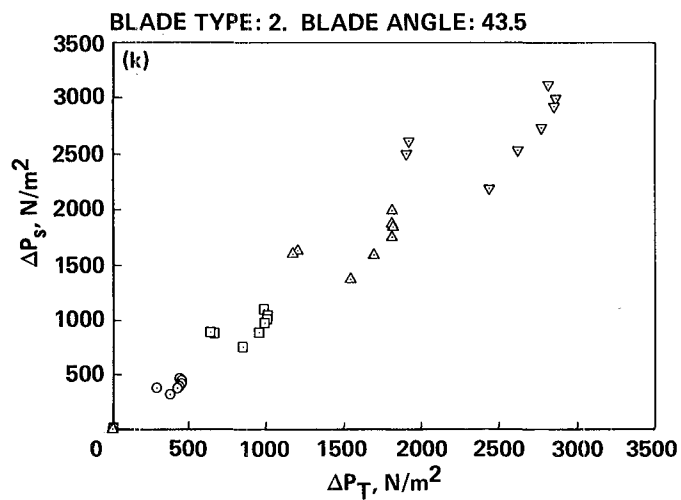
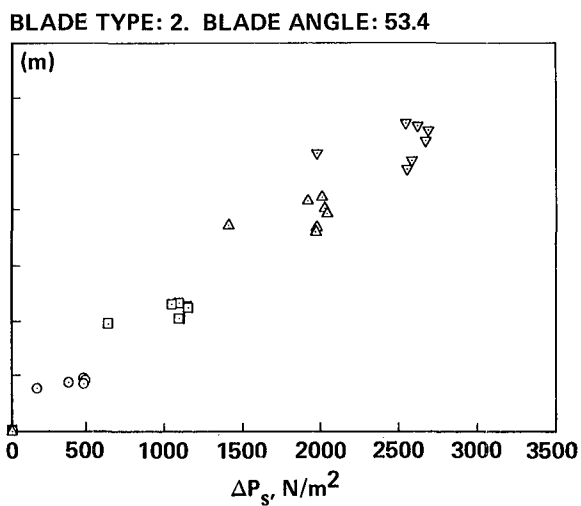
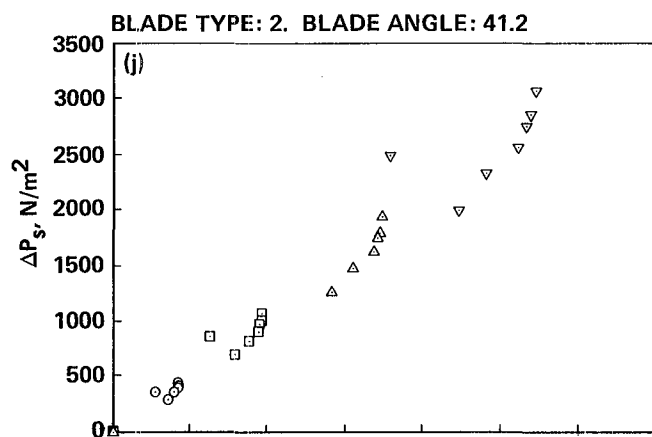
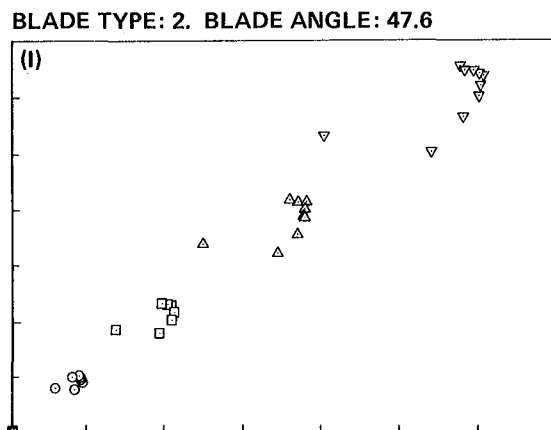
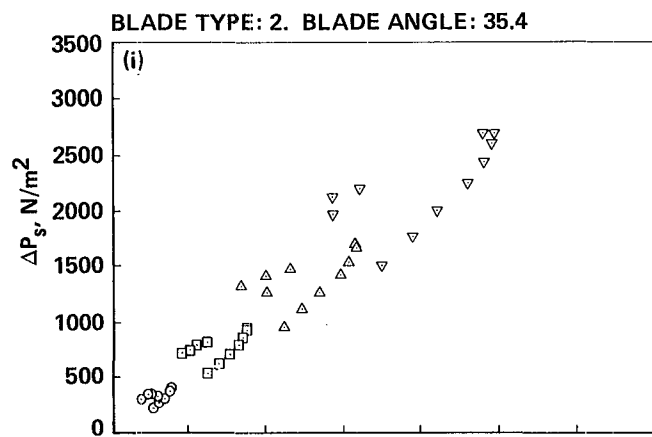


Figure 75.- Concluded.

APPENDIX A

BLADE SET I COORDINATES--BASE LINE DESIGN

NACA 65 series sections are used. The dimensions are in centimeters. The origin of each section is on the pitch axis (refer to figs. 6 and 7).

p = pressure surface
s = suction surface
mean = mean line

X _p	Y _p	X _s	Y _s	X _{mean}	Y _{mean}
r = 39.9					
-6.617	3.086	-6.617	3.086	-6.617	3.086
-6.403	3.193	-6.668	2.855	-6.535	3.023
-6.337	3.195	-6.655	2.789	-6.495	2.992
-6.218	3.188	-6.612	2.672	-6.414	2.929
-5.949	3.127	-6.474	2.426	-6.213	2.776
-5.453	2.969	-6.154	1.986	-5.804	2.479
-4.983	2.802	-5.806	1.585	-5.395	2.192
-4.526	2.629	-5.438	1.212	-4.981	1.920
-3.637	2.291	-4.661	0.531	-4.150	1.412
-2.774	1.966	-3.838	-0.074	-3.307	0.947
-1.925	1.661	-2.979	-0.607	-2.454	0.528
-1.090	1.372	-2.093	-1.072	-1.593	0.150
-0.257	1.100	-1.184	-1.471	-0.721	-0.185
0.572	0.843	-0.254	-1.806	0.160	-0.480
1.400	0.597	0.696	-2.070	1.049	-0.737
2.230	0.356	1.661	-2.261	1.946	-0.952
3.066	0.117	2.637	-2.375	2.852	-1.128
3.912	-0.112	3.619	-2.421	3.767	-1.265
4.775	-0.325	4.602	-2.400	4.689	-1.361
5.657	-0.516	5.588	-2.322	5.621	-1.417
6.558	-0.681	6.568	-2.187	6.563	-1.433
7.483	-0.810	7.544	-2.002	7.513	-1.405
8.430	-0.897	8.517	-1.768	8.473	-1.333
9.403	-0.932	9.484	-1.499	9.444	-1.214
10.396	-0.899	10.455	-1.201	10.424	-1.049
11.318	-0.780	11.354	-0.925	11.336	-0.851
11.400	-0.762	11.435	-0.904	11.417	-0.833
r = 45.7					
-6.579	4.067	-6.579	4.067	-6.579	4.067
-6.383	4.145	-6.634	3.861	-6.507	4.003
-6.322	4.143	-6.624	3.800	-6.474	3.973
-6.213	4.125	-6.591	3.693	-6.403	3.909
-5.972	4.046	-6.477	3.462	-6.226	3.754
-5.524	3.858	-6.210	3.038	-5.867	3.449
-5.098	3.658	-5.916	2.644	-5.507	3.152
-4.684	3.452	-5.601	2.273	-5.141	2.863
-3.873	3.035	-4.933	1.575	-4.404	2.304
-3.081	2.624	-4.221	0.935	-3.653	1.778
-2.299	2.220	-3.477	0.343	-2.888	1.280
-1.524	1.826	-2.703	-0.201	-2.113	0.813
-0.749	1.440	-1.900	-0.696	-1.326	0.371
0.020	1.062	-1.072	-1.143	-0.526	-0.041
0.792	0.688	-0.221	-1.539	0.284	-0.427
1.565	0.315	0.650	-1.882	1.107	-0.782
2.337	-0.061	1.544	-2.164	1.941	-1.113
3.119	-0.437	2.451	-2.395	2.786	-1.415
3.912	-0.805	3.371	-2.578	3.642	-1.692
4.717	-1.163	4.300	-2.718	4.509	-1.941

X_p	Y_p	X_s	Y_s	X_{mean}	Y_{mean}
5.540	-1.506	5.235	-2.814	5.387	-2.159
6.380	-1.829	6.172	-2.875	6.276	-2.352
7.242	-2.129	7.115	-2.906	7.178	-2.517
8.125	-2.395	8.059	-2.908	8.092	-2.652
9.032	-2.614	9.007	-2.898	9.020	-2.756
9.888	-2.753	9.878	-2.898	9.883	-2.827
9.964	-2.758	9.954	-2.903	9.959	-2.832
$r = 53.3$					
-5.997	4.704	-5.997	4.704	-5.997	4.704
-5.819	4.752	-6.055	4.526	-5.936	4.638
-5.763	4.745	-6.048	4.470	-5.905	4.608
-5.667	4.714	-6.022	4.371	-5.845	4.544
-5.453	4.618	-5.928	4.150	-5.692	4.384
-5.055	4.397	-5.705	3.741	-5.380	4.069
-4.676	4.163	-5.456	3.355	-5.067	3.759
-4.308	3.927	-5.192	2.987	-4.750	3.457
-3.586	3.444	-4.625	2.281	-4.105	2.863
-2.880	2.962	-4.018	1.618	-3.449	2.289
-2.182	2.484	-3.381	0.991	-2.781	1.737
-1.486	2.009	-2.713	0.396	-2.101	1.204
-0.792	1.539	-2.019	-0.163	-1.407	0.688
-0.102	1.074	-1.300	-0.686	-0.701	0.193
0.589	0.607	-0.559	-1.171	0.015	-0.282
1.278	0.140	0.208	-1.615	0.744	-0.737
1.968	-0.333	1.001	-2.017	1.483	-1.176
2.662	-0.805	1.811	-2.380	2.235	-1.593
3.363	-1.275	2.637	-2.708	3.000	-1.991
4.074	-1.740	3.475	-3.002	3.774	-2.372
4.798	-2.197	4.326	-3.266	4.562	-2.733
5.537	-2.644	5.182	-3.503	5.359	-3.073
6.292	-3.073	6.048	-3.716	6.170	-3.396
7.069	-3.480	6.916	-3.914	6.993	-3.696
7.866	-3.853	7.788	-4.102	7.826	-3.978
8.626	-4.153	8.585	-4.285	8.606	-4.219
8.692	-4.173	8.654	-4.305	8.674	-4.239
$r = 61.0$					
-5.286	5.042	-5.286	5.042	-5.286	5.042
-5.121	5.067	-5.344	4.884	-5.232	4.976
-5.072	5.055	-5.339	4.834	-5.204	4.945
-4.986	5.019	-5.319	4.740	-5.151	4.879
-4.793	4.907	-5.240	4.529	-5.016	4.719
-4.440	4.663	-5.052	4.135	-4.745	4.399
-4.102	4.409	-4.841	3.757	-4.470	4.082
-3.774	4.148	-4.615	3.391	-4.194	3.769
-3.134	3.625	-4.128	2.687	-3.630	3.157
-2.504	3.099	-3.607	2.017	-3.056	2.558
-1.882	2.573	-3.056	1.372	-2.469	1.971
-1.265	2.050	-2.477	0.752	-1.872	1.400
-0.650	1.529	-1.875	0.160	-1.262	0.843
-0.036	1.008	-1.247	-0.406	-0.643	0.300
0.577	0.488	-0.599	-0.945	-0.010	-0.229
1.189	-0.036	0.076	-1.453	0.632	-0.744
1.796	-0.564	0.775	-1.925	1.285	-1.245
2.408	-1.092	1.491	-2.370	1.948	-1.732
3.023	-1.623	2.228	-2.786	2.624	-2.205
3.647	-2.149	2.974	-3.178	3.312	-2.664
4.280	-2.672	3.736	-3.546	4.008	-3.109
4.928	-3.185	4.509	-3.894	4.717	-3.538
5.588	-3.688	5.286	-4.221	5.438	-3.955
6.266	-4.176	6.071	-4.539	6.167	-4.359
6.965	-4.641	6.855	-4.851	6.911	-4.745
7.633	-5.029	7.574	-5.149	7.602	-5.090
7.694	-5.060	7.635	-5.179	7.663	-5.118

X_p	Y_p	X_s	Y_s	X_{mean}	Y_{mean}
$r = 68.6$					
-4.643	5.222	-4.643	5.222	-4.643	5.222
-4.493	5.232	-4.702	5.083	-4.597	5.156
-4.448	5.215	-4.699	5.034	-4.575	5.123
-4.371	5.174	-4.684	4.945	-4.526	5.060
-4.199	5.052	-4.620	4.745	-4.409	4.897
-3.884	4.793	-4.460	4.361	-4.173	4.577
-3.584	4.524	-4.280	3.993	-3.932	4.260
-3.294	4.252	-4.087	3.635	-3.691	3.942
-2.725	3.701	-3.670	2.939	-3.198	3.320
-2.169	3.150	-3.221	2.268	-2.695	2.708
-1.621	2.596	-2.743	1.615	-2.182	2.106
-1.072	2.045	-2.243	0.988	-1.659	1.516
-0.528	1.494	-1.717	0.378	-1.123	0.935
0.013	0.945	-1.171	-0.211	-0.579	0.366
0.554	0.394	-0.602	-0.777	-0.025	-0.193
1.092	-0.160	-0.010	-1.318	0.541	-0.739
1.628	-0.719	0.605	-1.834	1.115	-1.278
2.164	-1.280	1.240	-2.327	1.702	-1.803
2.703	-1.842	1.890	-2.797	2.296	-2.319
3.249	-2.403	2.558	-3.249	2.903	-2.824
3.802	-2.959	3.236	-3.680	3.520	-3.320
4.369	-3.510	3.924	-4.097	4.145	-3.802
4.945	-4.054	4.620	-4.498	4.783	-4.277
5.537	-4.585	5.321	-4.892	5.431	-4.737
6.149	-5.098	6.025	-5.281	6.088	-5.189
6.736	-5.540	6.668	-5.649	6.701	-5.593
6.789	-5.575	6.721	-5.682	6.756	-5.629
$r = 76.2$					
-4.079	5.283	-4.079	5.283	-4.079	5.283
-3.942	5.278	-4.138	5.159	-4.039	5.220
-3.901	5.260	-4.135	5.113	-4.018	5.187
-3.833	5.215	-4.125	5.029	-3.978	5.121
-3.680	5.088	-4.074	4.836	-3.876	4.961
-3.401	4.816	-3.942	4.465	-3.670	4.641
-3.137	4.542	-3.790	4.107	-3.462	4.323
-2.878	4.260	-3.627	3.757	-3.254	4.008
-2.377	3.698	-3.269	3.071	-2.824	3.383
-1.887	3.132	-2.880	2.408	-2.385	2.769
-1.402	2.568	-2.469	1.760	-1.935	2.164
-0.919	2.004	-2.032	1.130	-1.476	1.567
-0.439	1.440	-1.575	0.518	-1.006	0.980
0.041	0.879	-1.095	-0.076	-0.528	0.401
0.518	0.317	-0.594	-0.655	-0.038	-0.168
0.993	-0.249	-0.058	-1.212	0.460	-0.729
1.466	-0.818	0.475	-1.745	0.970	-1.283
1.938	-1.389	1.039	-2.261	1.488	-1.824
2.413	-1.958	1.621	-2.758	2.017	-2.360
2.896	-2.530	2.215	-3.238	2.555	-2.885
3.386	-3.096	2.824	-3.703	3.104	-3.401
3.884	-3.660	3.442	-4.155	3.663	-3.909
4.394	-4.216	4.069	-4.595	4.232	-4.407
4.920	-4.765	4.702	-5.027	4.811	-4.895
5.464	-5.296	5.337	-5.456	5.400	-5.375
5.987	-5.761	5.913	-5.857	5.951	-5.809
6.035	-5.799	5.961	-5.893	5.999	-5.847
$r = 83.8$					
-3.564	5.273	-3.564	5.273	-3.564	5.273
-3.437	5.258	-3.619	5.159	-3.528	5.210
-3.401	5.235	-3.622	5.118	-3.513	5.177
-3.340	5.187	-3.617	5.039	-3.477	5.113
-3.205	5.055	-3.576	4.851	-3.391	4.953
-2.959	4.778	-3.472	4.493	-3.216	4.635

X_p	Y_p	X_s	Y_s	X_{mean}	Y_{mean}
-2.728	4.496	-3.348	4.145	-3.038	4.321
-2.504	4.214	-3.211	3.802	-2.858	4.008
-2.068	3.642	-2.911	3.132	-2.489	3.388
-1.638	3.073	-2.581	2.477	-2.111	2.776
-1.214	2.507	-2.225	1.839	-1.720	2.172
-0.792	1.941	-1.847	1.214	-1.321	1.577
-0.371	1.377	-1.448	0.607	-0.909	0.991
0.053	0.815	-1.026	0.013	-0.488	0.414
0.472	0.254	-0.584	-0.564	-0.056	-0.155
0.894	-0.310	-0.122	-1.125	0.386	-0.716
1.311	-0.876	0.366	-1.664	0.838	-1.270
1.732	-1.443	0.871	-2.187	1.300	-1.816
2.154	-2.012	1.394	-2.692	1.775	-2.352
2.586	-2.576	1.933	-3.185	2.258	-2.880
3.023	-3.139	2.482	-3.663	2.753	-3.401
3.470	-3.698	3.045	-4.125	3.256	-3.912
3.929	-4.249	3.614	-4.580	3.772	-4.415
4.404	-4.793	4.191	-5.024	4.298	-4.910
4.897	-5.324	4.773	-5.466	4.834	-5.395
5.375	-5.791	5.301	-5.880	5.339	-5.834
5.420	-5.829	5.344	-5.916	5.382	-5.872
$r = 91.4$					
-3.096	5.202	-3.096	5.202	-3.096	5.202
-2.982	5.177	-3.155	5.100	-3.068	5.138
-2.949	5.154	-3.160	5.060	-3.053	5.108
-2.896	5.100	-3.157	4.986	-3.025	5.044
-2.779	4.963	-3.132	4.806	-2.957	4.884
-2.570	4.681	-3.053	4.458	-2.812	4.569
-2.372	4.397	-2.957	4.117	-2.664	4.257
-2.179	4.110	-2.847	3.782	-2.515	3.947
-1.806	3.541	-2.601	3.127	-2.202	3.332
-1.435	2.972	-2.324	2.484	-1.880	2.728
-1.067	2.408	-2.022	1.857	-1.544	2.134
-0.701	1.849	-1.697	1.245	-1.199	1.547
-0.330	1.293	-1.346	0.645	-0.838	0.968
0.041	0.739	-0.973	0.058	-0.465	0.399
0.414	0.191	-0.579	-0.511	-0.081	-0.160
0.790	-0.361	-0.163	-1.062	0.315	-0.711
1.166	-0.912	0.279	-1.595	0.721	-1.252
1.544	-1.461	0.739	-2.111	1.143	-1.786
1.930	-2.009	1.219	-2.611	1.575	-2.309
2.324	-2.558	1.714	-3.094	2.019	-2.824
2.728	-3.099	2.225	-3.564	2.477	-3.332
3.145	-3.637	2.746	-4.021	2.944	-3.828
3.574	-4.168	3.279	-4.465	3.426	-4.318
4.018	-4.691	3.820	-4.900	3.919	-4.796
4.486	-5.199	4.366	-5.331	4.427	-5.265
4.940	-5.649	4.867	-5.730	4.905	-5.690
4.981	-5.685	4.910	-5.766	4.945	-5.725

APPENDIX B

BLADE SET II COORDINATES--MODIFIED DESIGN

Modified NACA 65-series sections are used. The dimensions are in centimeters. The origin of each section is on the pitch axis (refer to figs. 6 and 7).

p = pressure surface
smod = modified suction surface
mean = mean line

X _p	Y _p	X _{smod}	Y _{smod}	X _{mean}	Y _{mean}
r = 39.9					
-6.617	3.086	-6.617	3.086	-6.617	3.086
-6.404	3.192	-6.668	2.856	-6.668	3.024
-6.339	3.195	-6.655	2.790	-6.655	2.992
-6.220	3.187	-6.612	2.674	-6.612	2.931
-5.951	3.127	-6.475	2.429	-6.475	2.777
-5.459	2.970	-6.156	1.991	-6.156	2.480
-4.990	2.803	-5.810	1.592	-5.810	2.197
-4.535	2.631	-5.443	1.220	-5.443	1.925
-3.650	2.295	-4.670	0.542	-4.670	1.418
-2.790	1.971	-3.850	-0.060	-3.850	0.956
-1.945	1.668	-2.995	-0.591	-2.995	0.538
-1.113	1.379	-2.112	-1.054	-2.112	0.162
-0.284	1.108	-1.207	-1.451	-1.207	-0.171
0.540	0.853	-0.281	-1.785	-0.281	-0.466
1.365	0.608	0.664	-2.048	0.664	-0.720
2.192	0.368	1.625	-2.237	1.625	-0.935
3.024	0.130	2.597	-2.351	2.597	-1.111
3.866	-0.098	3.575	-2.397	3.575	-1.247
4.726	-0.310	4.554	-2.376	4.554	-1.344
5.604	-0.500	5.535	-2.298	5.535	-1.399
6.501	-0.664	6.511	-2.164	6.511	-1.414
7.422	-0.793	7.483	-1.980	7.483	-1.387
8.365	-0.880	8.451	-1.747	8.451	-1.313
9.334	-0.915	9.415	-1.479	9.415	-1.197
10.323	-0.882	10.381	-1.183	10.381	-1.032
11.241	-0.763	11.276	-0.907	11.276	-0.835
11.322	-0.745	11.357	-0.887	11.357	-0.816
r = 45.7					
-6.579	4.067	-6.579	4.067	-6.579	4.067
-6.384	4.145	-6.664	3.792	-6.634	4.004
-6.323	4.142	-6.667	3.658	-6.624	3.972
-6.214	4.125	-6.652	3.549	-6.591	3.910
-5.974	4.046	-6.564	3.257	-6.478	3.756
-5.529	3.859	-6.317	2.789	-6.212	3.451
-5.104	3.659	-6.025	2.393	-5.918	3.155
-4.692	3.454	-5.705	2.040	-5.605	2.868
-3.885	3.040	-5.020	1.394	-4.940	2.313
-3.096	2.630	-4.291	0.807	-4.232	1.789
-2.317	2.228	-3.532	0.260	-3.491	1.294
-1.546	1.836	-2.747	-0.249	-2.719	0.827
-0.774	1.451	-1.921	-0.720	-1.920	0.388
-0.008	1.075	-1.108	-1.150	-1.096	-0.023
0.761	0.703	-0.256	-1.534	-0.248	-0.406
1.529	0.331	0.614	-1.868	0.619	-0.763
2.298	-0.043	1.506	-2.145	1.509	-1.090
3.077	-0.417	2.410	-2.372	2.412	-1.392
3.866	-0.784	3.327	-2.552	3.419	-1.667

X_p	Y_p	X_{smod}	Y_{smod}	X_{mean}	Y_{mean}
4.668	-1.141	4.253	-2.690	4.253	-1.915
5.487	-1.482	5.183	-2.786	5.184	-2.134
6.325	-1.803	6.117	-2.846	6.117	-2.324
7.182	-2.102	7.056	-2.876	7.056	-2.489
8.062	-2.367	7.996	-2.878	7.996	-2.623
8.965	-2.585	8.940	-2.868	8.940	-2.726
9.817	-2.724	9.807	-2.868	9.807	-2.796
9.893	-2.729	9.883	-2.873	9.883	-2.801
$r = 53.3$					
-5.997	4.704	-5.997	4.704	-5.997	4.704
-5.820	4.752	-6.099	4.456	-6.055	4.640
-5.764	4.745	-6.105	4.377	-6.048	4.608
-5.668	4.714	-6.099	4.246	-6.022	4.544
-5.456	4.618	-6.035	3.980	-5.929	4.385
-5.059	4.398	-5.831	3.540	-5.706	4.072
-4.682	4.166	-5.584	3.155	-5.458	3.763
-4.315	3.930	-5.312	2.802	-5.195	3.462
-3.597	3.450	-4.724	2.140	-4.631	2.871
-2.894	2.969	-4.095	1.520	-4.027	2.300
-2.199	2.494	-3.439	0.929	-3.392	1.750
-1.505	2.021	-2.759	0.361	-2.727	1.218
-0.815	1.553	-2.058	-0.178	-2.037	0.706
-0.127	1.090	-1.335	-0.686	-1.321	0.214
0.561	0.625	-0.592	-1.161	-0.582	-0.260
1.246	0.160	0.176	-1.598	0.182	-0.714
1.934	-0.311	0.967	-1.994	0.970	-1.149
2.625	-0.781	1.775	-2.353	1.777	-1.565
3.323	-1.249	2.598	-2.678	2.599	-1.962
4.031	-1.712	3.433	-2.971	3.434	-2.340
4.751	-2.167	4.280	-3.233	4.281	-2.700
5.487	-2.612	5.133	-3.468	5.133	-3.040
6.239	-3.040	5.996	-3.680	5.996	-3.360
7.012	-3.444	6.861	-3.877	6.861	-3.661
7.806	-3.816	7.728	-4.064	7.728	-3.940
8.563	-4.115	8.522	-4.246	8.522	-4.180
8.628	-4.135	8.591	-4.267	8.591	-4.201
$r = 61.0$					
-5.286	5.042	-5.286	5.042	-5.286	5.042
-5.121	5.067	-5.399	4.815	-5.344	4.976
-5.073	5.055	-5.409	4.745	-5.339	4.945
-4.987	5.019	-5.410	4.625	-5.319	4.880
-4.795	4.908	-5.362	4.376	-5.240	4.720
-4.443	4.665	-5.196	3.957	-5.053	4.402
-4.107	4.412	-4.985	3.581	-4.843	4.087
-3.781	4.152	-4.751	3.229	-4.618	3.775
-3.144	3.630	-4.237	2.565	-4.133	3.164
-2.516	3.107	-3.691	1.932	-3.614	2.568
-1.897	2.583	-3.119	1.319	-3.065	1.986
-1.282	2.063	-2.525	0.724	-2.489	1.416
-0.670	1.544	-1.913	0.150	-1.889	0.863
-0.058	1.026	-1.281	-0.403	-1.265	0.321
0.551	0.507	-0.630	-0.932	-0.620	-0.206
1.161	-0.014	0.046	-1.433	0.053	-0.719
1.765	-0.539	0.744	-1.900	0.748	-1.218
2.375	-1.066	1.459	-2.341	1.462	-1.702
2.987	-1.594	2.194	-2.754	2.195	-2.174
3.609	-2.118	2.938	-3.143	2.939	-2.630
4.239	-2.639	3.697	-3.509	3.697	-3.074
4.883	-3.150	4.466	-3.856	4.466	-3.502
5.541	-3.650	5.240	-4.182	5.240	-3.916
6.216	-4.136	6.022	-4.498	6.022	-4.317
6.912	-4.599	6.803	-4.809	6.803	-4.704
7.577	-4.986	7.519	-5.105	7.519	-5.045

X_p	Y_p	X_{smod}	Y_{smod}	X_{mean}	Y_{mean}
7.638	-5.016	7.579	-5.135	7.579	-5.075
		$r = 68.6$			
-4.643	5.222	-4.643	5.222	-4.643	5.222
-4.494	5.232	-4.756	5.025	-4.701	5.158
-4.448	5.214	-4.768	4.962	-4.699	5.125
-4.372	5.174	-4.773	4.852	-4.684	5.060
-4.201	5.053	-4.739	4.622	-4.620	4.900
-3.887	4.795	-4.599	4.220	-4.461	4.580
-3.588	4.527	-4.418	3.855	-4.281	4.263
-3.300	4.256	-4.216	3.509	-4.089	3.949
-2.734	3.708	-3.773	2.844	-3.674	3.328
-2.180	3.158	-3.299	2.205	-3.227	2.720
-1.633	2.607	-2.802	1.577	-2.751	2.119
-1.087	2.058	-2.288	0.970	-2.253	1.532
-0.546	1.510	-1.753	0.375	-1.730	0.954
-0.008	0.963	-1.201	-0.203	-1.186	0.388
0.531	0.414	-0.629	-0.762	-0.619	-0.169
1.067	-0.137	-0.036	-1.296	-0.030	-0.713
1.601	-0.693	0.578	-1.808	0.582	-1.248
2.135	-1.252	1.212	-2.297	1.214	-1.773
2.671	-1.811	1.860	-2.763	1.862	-2.286
3.215	-2.370	2.526	-3.213	2.527	-2.791
3.766	-2.924	3.201	-3.642	3.202	-3.283
4.330	-3.473	3.887	-4.057	3.887	-3.765
4.904	-4.014	4.580	-4.456	4.580	-4.235
5.494	-4.542	5.278	-4.849	5.278	-4.695
6.103	-5.053	5.979	-5.235	5.979	-5.144
6.687	-5.493	6.619	-5.602	6.619	-5.548
6.740	-5.529	6.672	-5.635	6.672	-5.582
		$r = 76.2$			
-4.072	5.283	-4.072	5.283	-4.072	5.283
-3.935	5.278	-4.187	5.107	-4.130	5.219
-3.895	5.260	-4.200	5.048	-4.128	5.187
-3.826	5.215	-4.210	4.946	-4.117	5.123
-3.675	5.088	-4.188	4.728	-4.067	4.963
-3.396	4.818	-4.076	4.341	-3.935	4.644
-3.133	4.545	-3.923	3.986	-3.783	4.329
-2.876	4.264	-3.751	3.646	-3.621	4.013
-2.377	3.705	-3.366	2.989	-3.265	3.393
-1.889	3.141	-2.952	2.353	-2.878	2.781
-1.406	2.580	-2.520	1.728	-2.468	2.178
-0.926	2.018	-2.069	1.116	-2.034	1.583
-0.447	1.457	-1.602	0.517	-1.578	0.998
0.030	0.898	-1.115	-0.067	-1.100	0.422
0.506	0.339	-0.612	-0.639	-0.602	-0.146
0.979	-0.225	-0.087	-1.189	-0.081	-0.704
1.449	-0.792	0.459	-1.718	0.463	-1.253
1.919	-1.360	1.022	-2.230	1.024	-1.794
2.393	-1.927	1.602	-2.725	1.604	-2.326
2.873	-2.496	2.194	-3.202	2.195	-2.849
3.361	-3.060	2.802	-3.665	2.802	-3.362
3.857	-3.622	3.416	-4.115	3.417	-3.868
4.365	-4.175	4.041	-4.552	4.041	-4.364
4.888	-4.722	4.685	-4.982	4.671	-4.852
5.430	-5.250	5.304	-5.410	5.304	-5.330
5.951	-5.713	5.878	-5.809	5.878	-5.761
5.999	-5.751	5.926	-5.845	5.926	-5.798
		$r = 83.8$			
-3.564	5.273	-3.564	5.273	-3.564	5.273
-3.437	5.258	-3.679	5.112	-3.619	5.209
-3.402	5.235	-3.694	5.060	-3.622	5.177
-3.341	5.187	-3.709	4.966	-3.617	5.114
-3.207	5.055	-3.698	4.755	-3.576	4.954

X_p	Y_p	X_{smod}	Y_{smod}	X_{mean}	Y_{mean}
-2.961	4.780	-3.614	4.383	-3.473	4.639
-2.732	4.499	-3.489	4.038	-3.349	4.325
-2.509	4.218	-3.342	3.704	-3.212	4.013
-2.074	3.649	-3.015	3.059	-2.913	3.395
-1.647	3.083	-2.659	2.429	-2.585	2.786
-1.224	2.519	-2.283	1.812	-2.231	2.186
-0.804	1.955	-1.890	1.203	-1.854	1.594
-0.385	1.394	-1.481	0.608	-1.457	1.009
0.038	0.835	-1.053	0.023	-1.037	0.435
0.455	0.276	-0.607	-0.547	-0.597	-0.132
0.875	-0.285	-0.143	-1.103	-0.137	-0.692
1.290	-0.850	0.344	-1.637	0.349	-1.242
1.709	-1.414	0.849	-2.156	0.852	-1.784
2.130	-1.980	1.372	-2.659	1.373	-2.319
2.559	-2.542	1.908	-3.150	1.909	-2.845
2.994	-3.103	2.455	-3.625	2.455	-3.363
3.439	-3.660	3.017	-4.085	3.017	-3.872
3.897	-4.208	3.583	-4.537	3.583	-4.373
4.370	-4.750	4.157	-4.980	4.157	-4.864
4.861	-5.278	4.737	-5.420	4.737	-5.349
5.336	-5.744	5.263	-5.832	5.263	-5.788
5.381	-5.782	5.306	-5.868	5.306	-5.824
$r = 91.4$					
-3.096	5.202	-3.096	5.202	-3.096	5.202
-2.982	5.177	-3.204	5.064	-3.154	5.139
-2.949	5.154	-3.221	5.014	-3.159	5.107
-2.896	5.101	-3.237	4.928	-3.157	5.044
-2.780	4.964	-3.237	4.730	-3.132	4.886
-2.573	4.684	-3.177	4.370	-3.053	4.572
-2.375	4.400	-3.079	4.032	-2.957	4.261
-2.183	4.114	-2.962	3.705	-2.848	3.951
-1.812	3.548	-2.692	3.070	-2.603	3.342
-1.442	2.981	-2.392	2.448	-2.327	2.739
-1.075	2.420	-2.072	1.838	-2.026	2.146
-0.711	1.863	-1.734	1.239	-1.703	1.563
-0.342	1.310	-1.375	0.649	-1.354	0.988
0.027	0.758	-0.996	0.071	-0.982	0.420
0.399	0.212	-0.599	-0.493	-0.590	-0.137
0.773	-0.337	-0.181	-1.039	-0.175	-0.686
1.148	-0.886	0.261	-1.569	0.265	-1.226
1.524	-1.432	0.720	-2.081	0.723	-1.755
1.909	-1.978	1.199	-2.578	1.200	-2.278
2.300	-2.524	1.693	-3.058	1.694	-2.791
2.703	-3.063	2.202	-3.526	2.202	-3.294
3.118	-3.599	2.720	-3.981	2.721	-3.790
3.545	-4.128	3.251	-4.423	3.251	-4.276
3.988	-4.649	3.790	-4.856	3.790	-4.752
4.453	-5.155	4.334	-5.286	4.334	-5.220
4.906	-5.602	4.833	-5.683	4.833	-5.642
4.946	-5.637	4.876	-5.718	4.876	-5.678

APPENDIX C

DERIVATION OF THE SWIRL CORRECTION EQUATION

Starting with the energy equation

$$P_{tm} = P_s + [0.5 * \rho * (U_t)^{**2}]$$

the total component of velocity can be computed from the measured total and static pressure. The axial velocity component is desired. Thus a geometric correction to the total pressure is required

$$P_{tc} = P_s + [0.5 * \rho * (U_a)^{**2}] \quad (A1)$$

The axial velocity is related to the total velocity by

$$U_a = U_t * \cos \phi \quad (A2)$$

Thus

$$(U_a)^{**2} = (U_t)^{**2} * \cos^2 \phi \quad (A3)$$

then, by substitution

$$P_{tc} = P_s + [0.5 * \rho * (U_t)^{**2} * (U_a/U_t)^{**2}] \quad (A4)$$

$$[0.5 * \rho * (U_t)^{**2}] = (P_{tm} - P_s) \quad (A5)$$

$$P_{tc} = P_s + (P_{tm} - P_s) * (U_a/U_t)^{**2} \quad (A6)$$

$$P_{tc} = P_s + (P_{tm} * \cos^2 \phi) - (P_s * \cos^2 \phi) \quad (A7)$$

thus, the corrected total pressure is

$$P_{tc} = P_{tm}(\cos^2 \phi) + P_s(1 - \cos^2 \phi) \quad (A8)$$

where:

P_{tc} = corrected total pressure at station 2

U_a = axial velocity component

U_t = total velocity component

APPENDIX D

RAKE TOTAL PRESSURE DATA FOR THE DATA RUNS WITH REDUCED THROTTLE SETTINGS

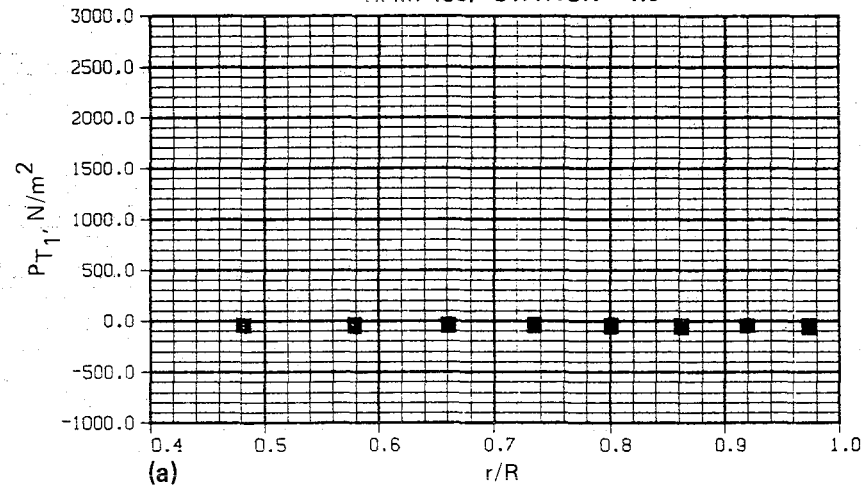
The figures in this Appendix and figures 110-277 comprise all of the rake total pressure data acquired during the test. The blade type, blade angle, run number, massflow (MASSF), rpm, and axial station of data acquisition are noted on the figures. Refer to the runlog shown in table 2 for further information. The data shown are gage pressure. Some anomalies exist in the data. A possible cause is leaks in the pressure tubes, which occurred occasionally throughout the test.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

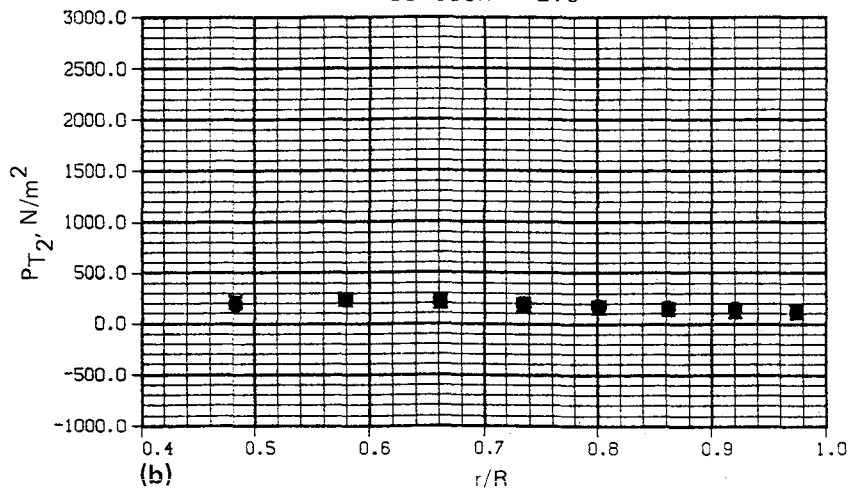
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 15. MASS FLOW: 43.27 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

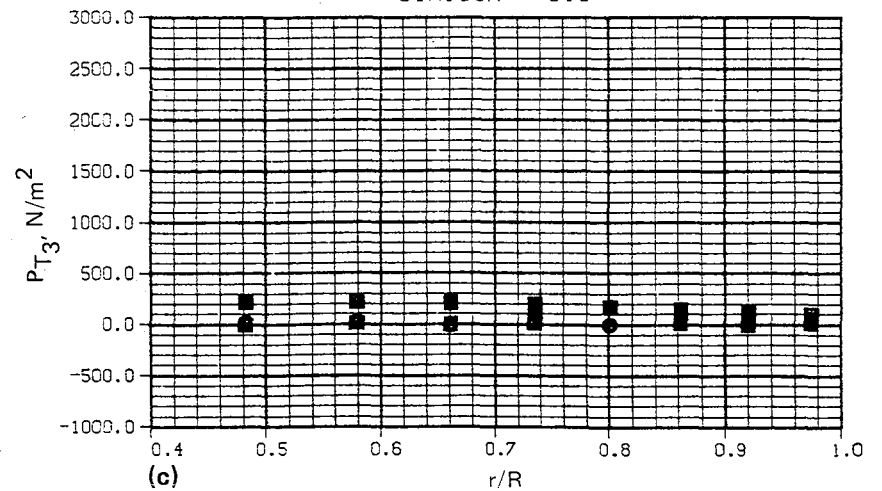


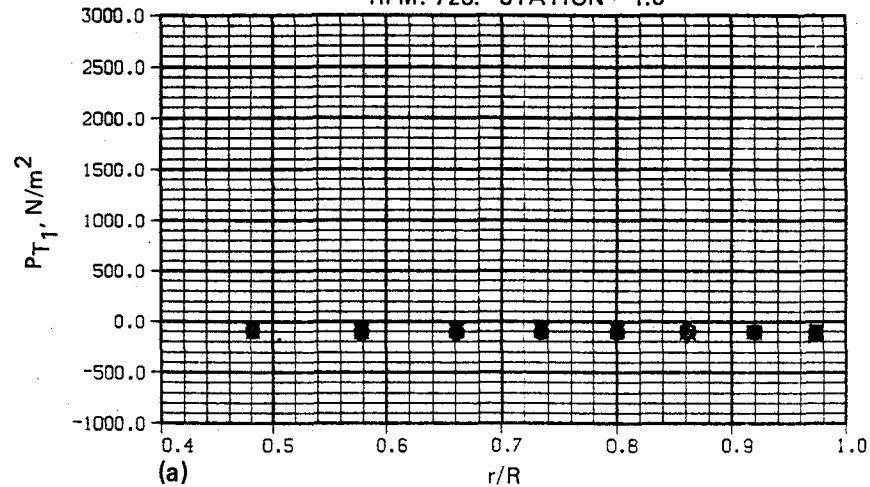
Figure D1.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

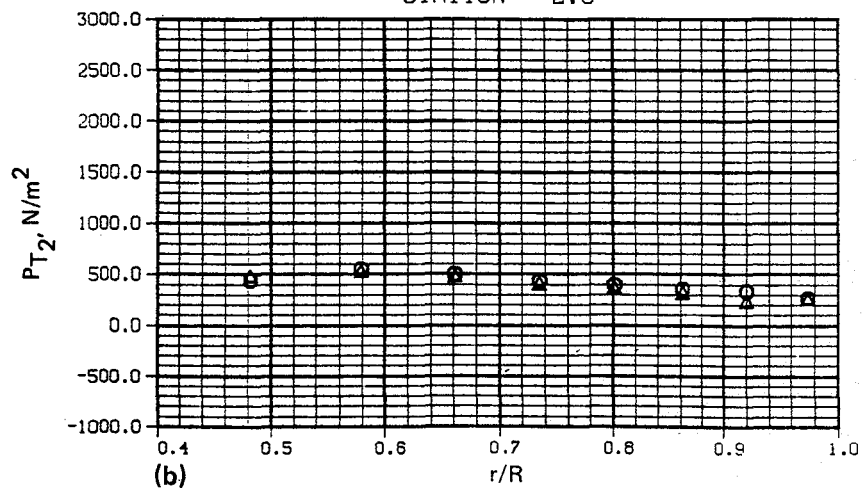
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 15. MASS FLOW: 65.48 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

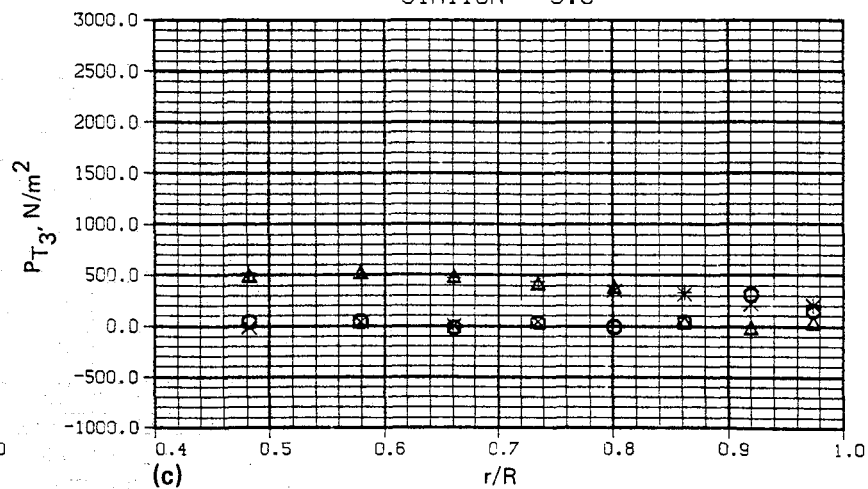


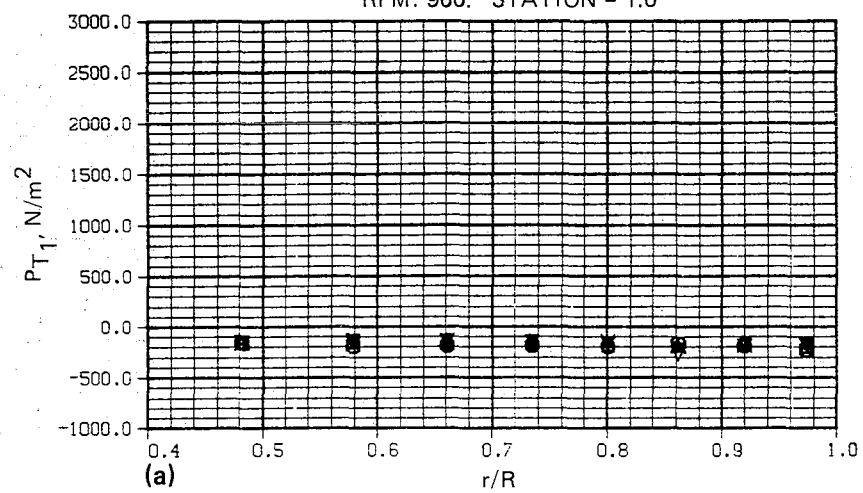
Figure D2.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

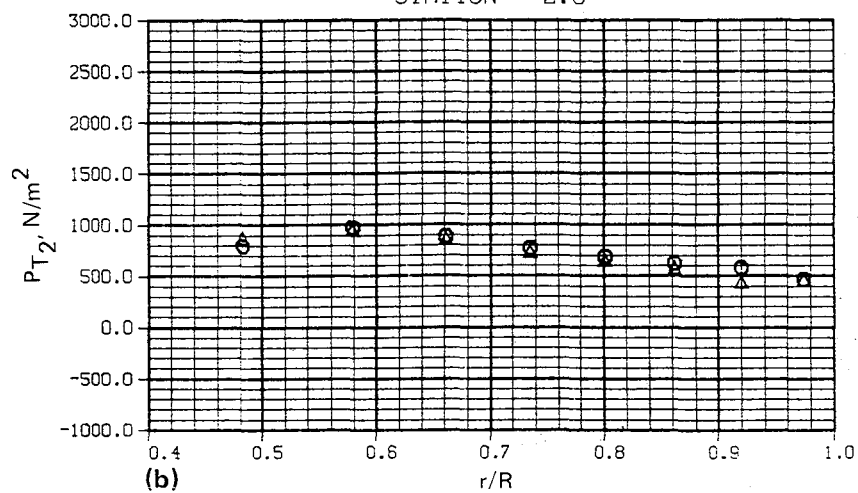
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 15. MASS FLOW: 87.55 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

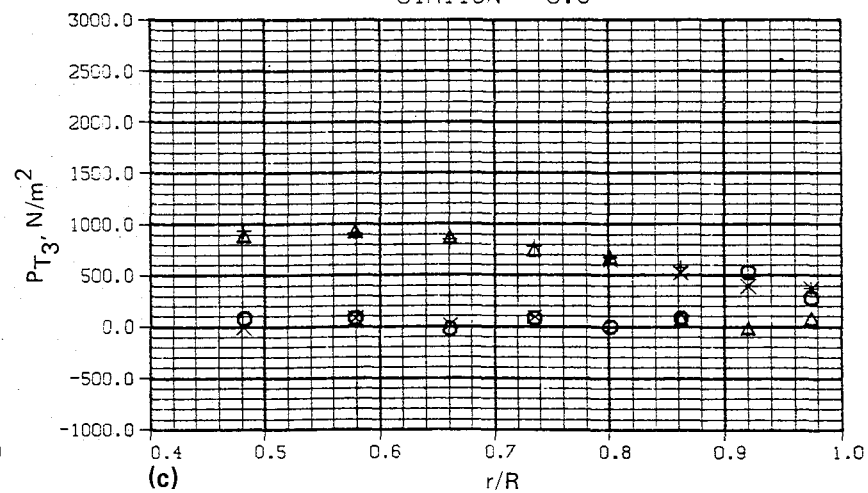


Figure D3.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 15. MASS FLOW: 109.92 slugs/sec

RPM: 1200. STATION = 1.0

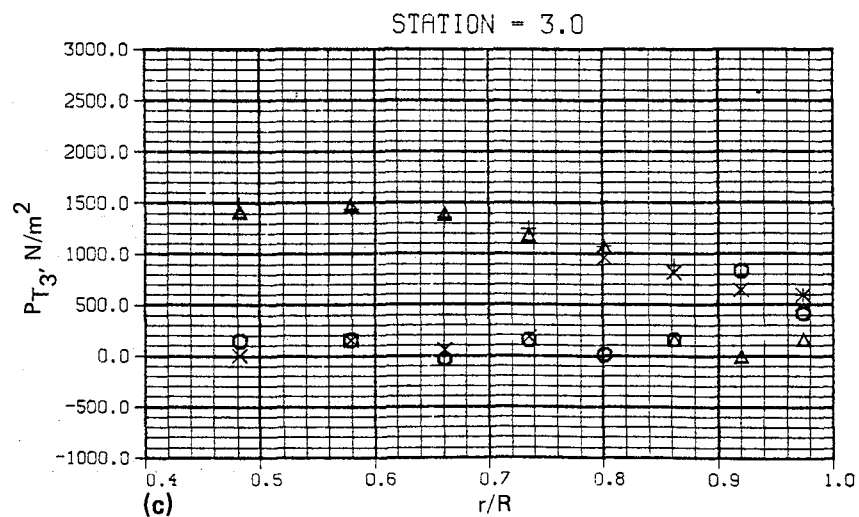
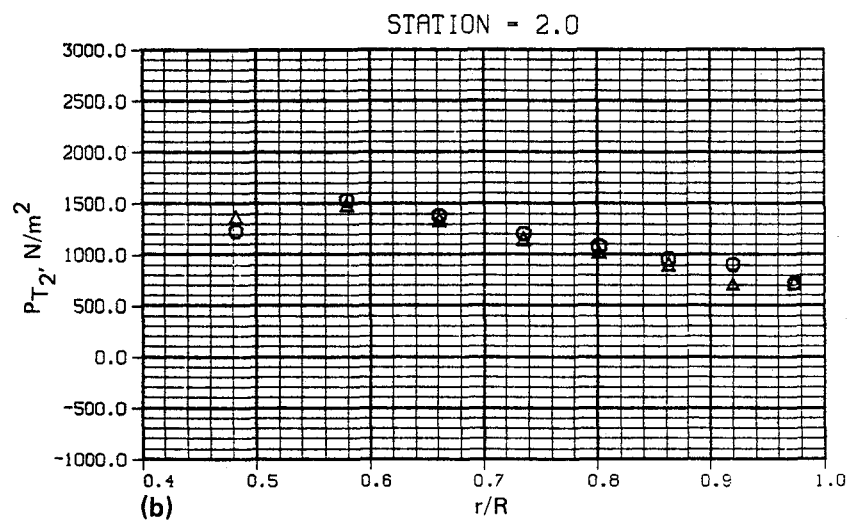
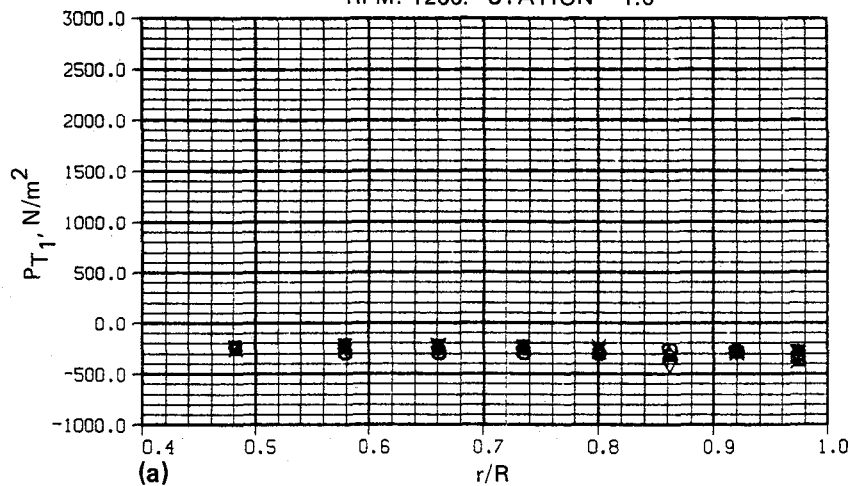


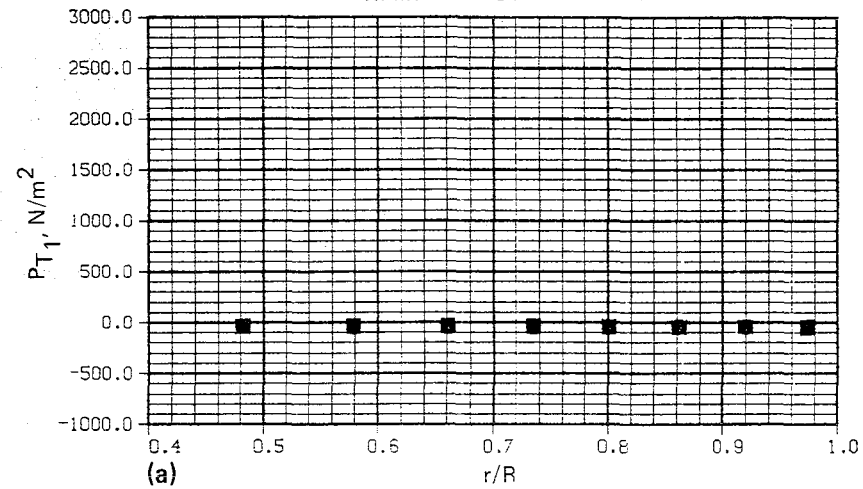
Figure D4.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

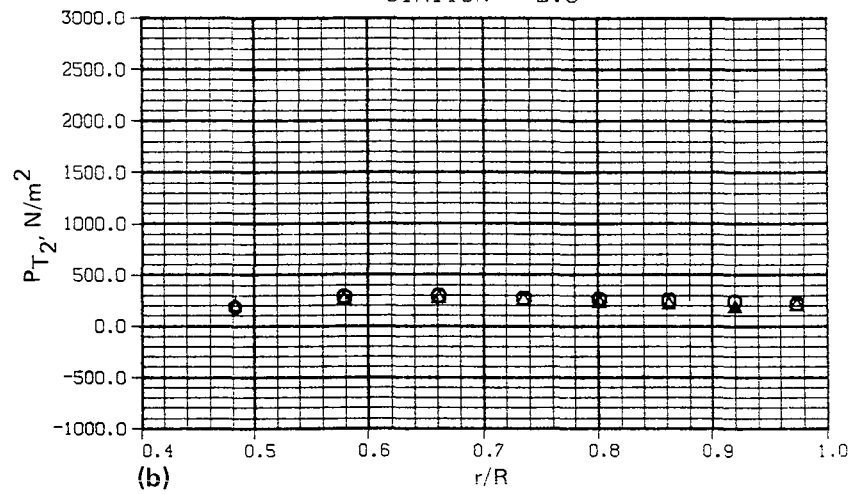
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 16. MASS FLOW: 37.61 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

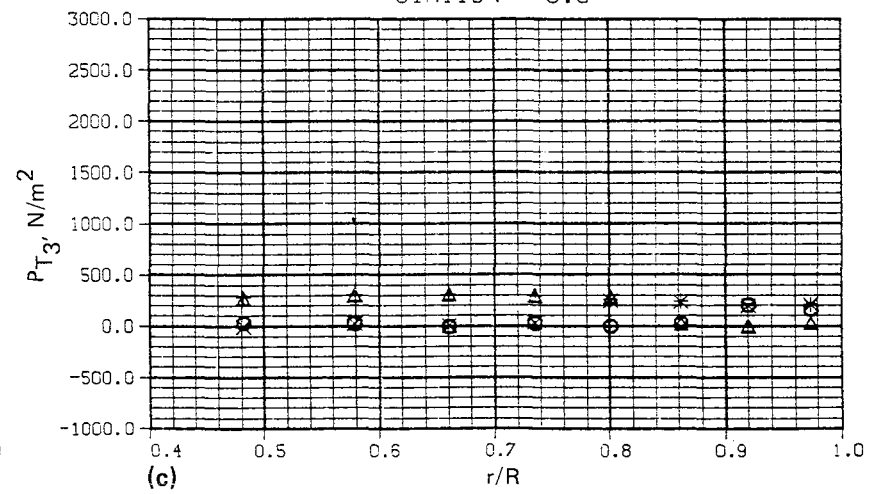


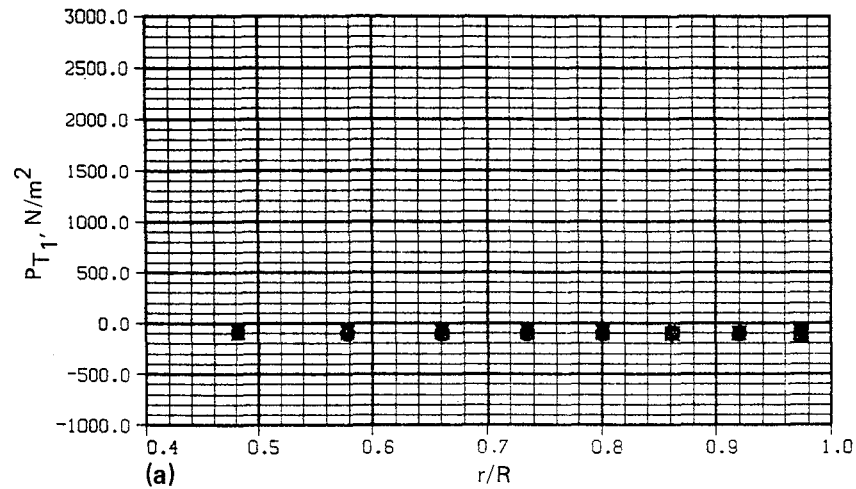
Figure D5.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

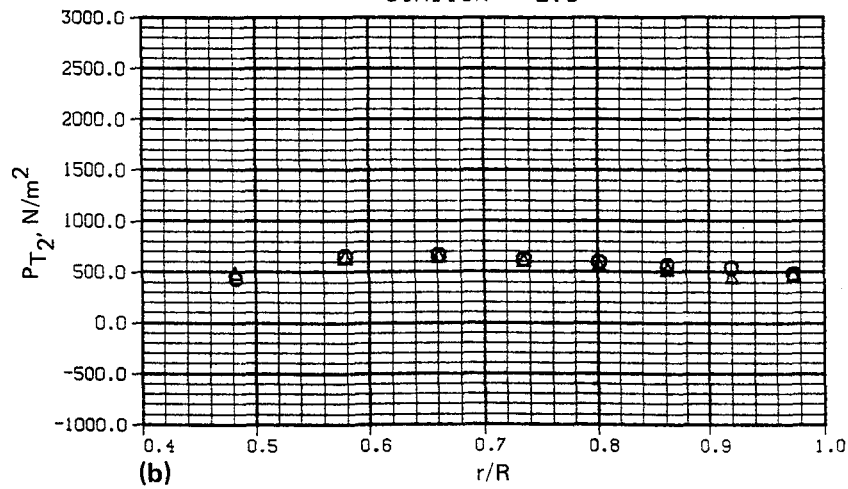
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 16. MASS FLOW: 57.20 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

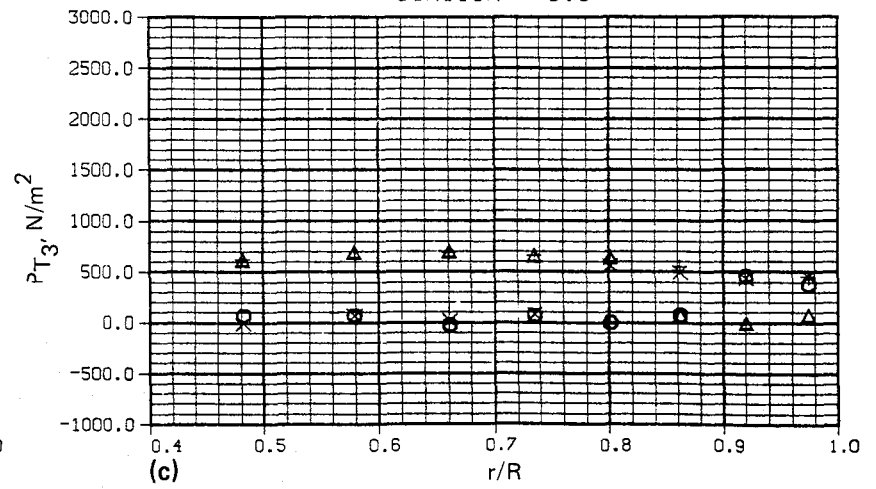


Figure D6.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 16. MASS FLOW: 76.79 slugs/sec

RPM: 960. STATION = 1.0

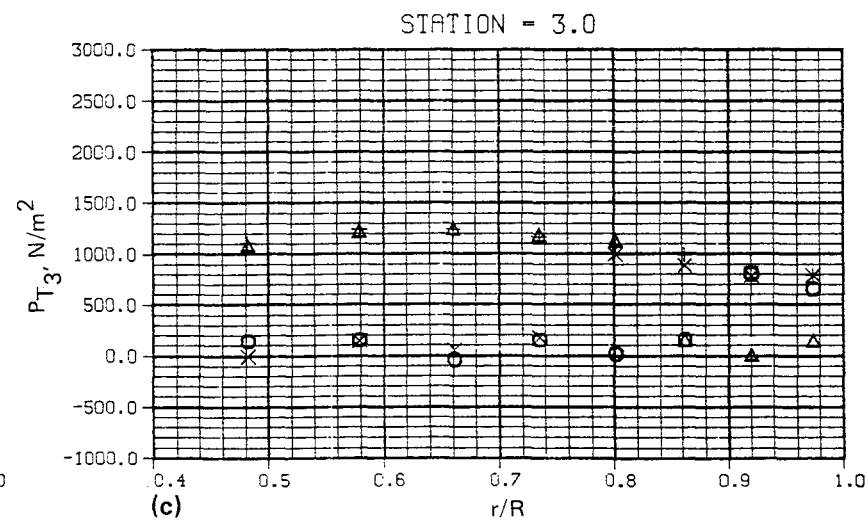
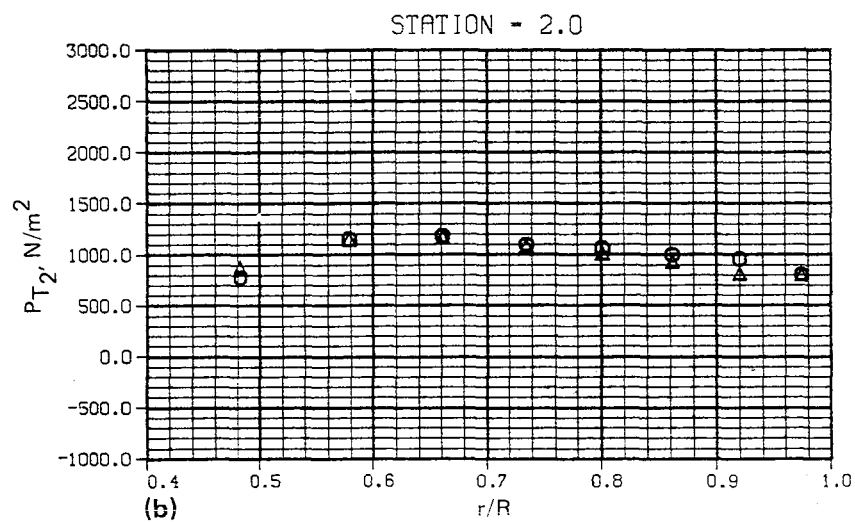
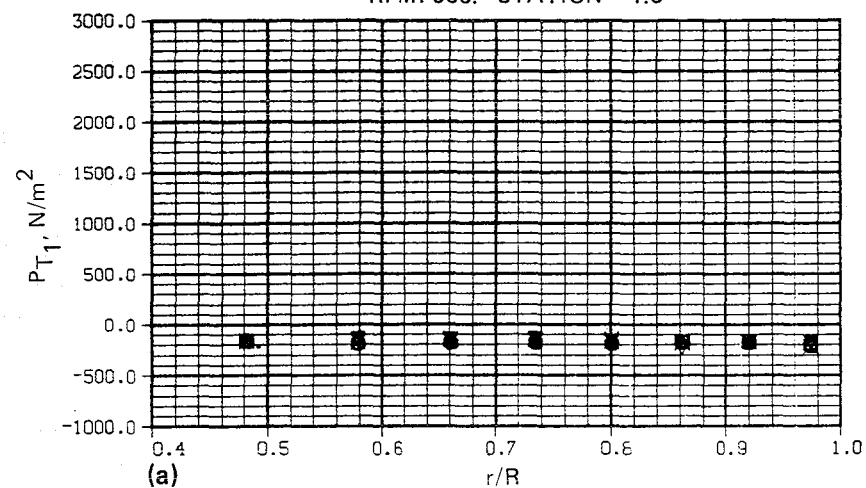
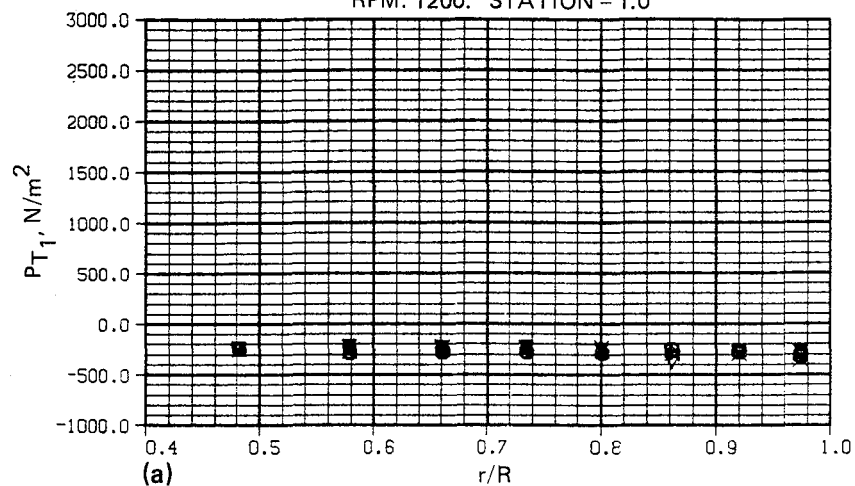
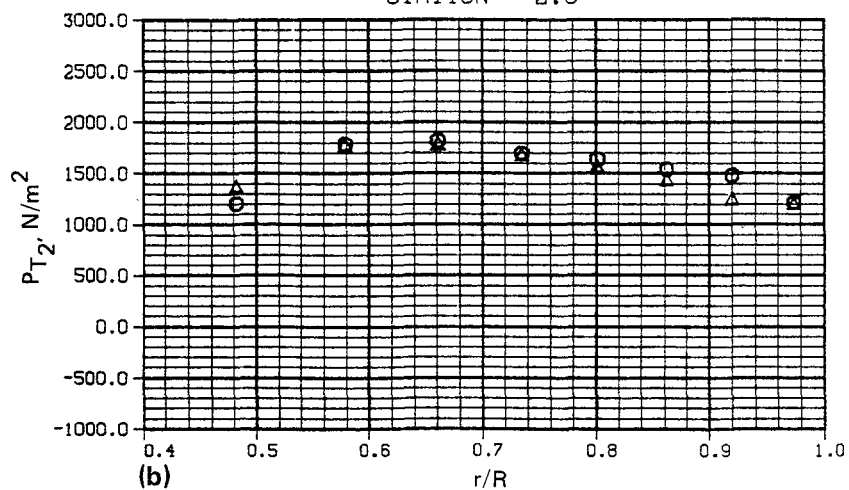


Figure D7.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 24.9
 RUN NO: 16. MASS FLOW: 96.43 slugs/sec
 RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

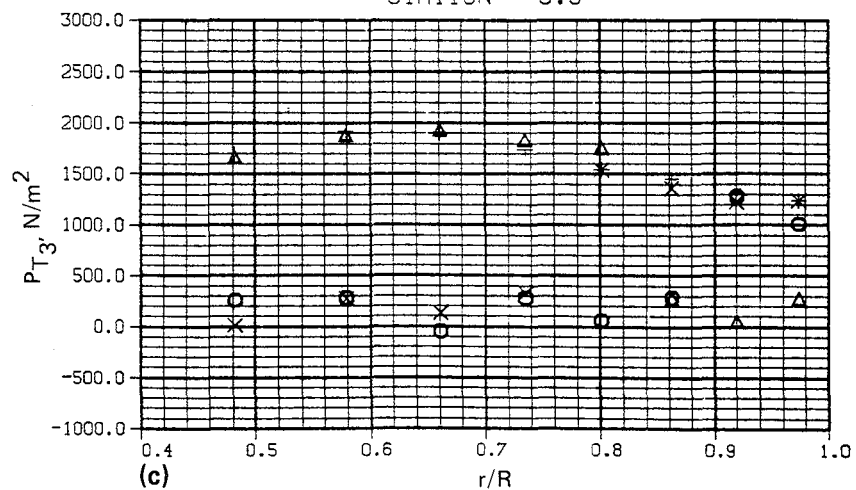


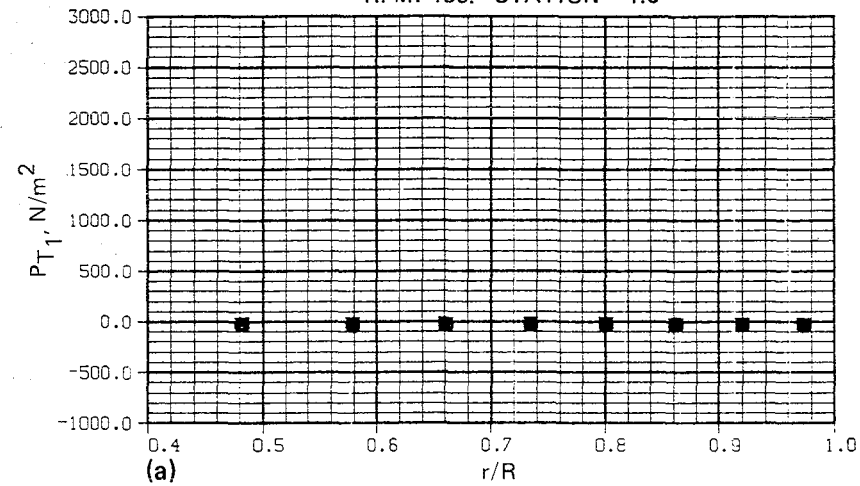
Figure D8.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

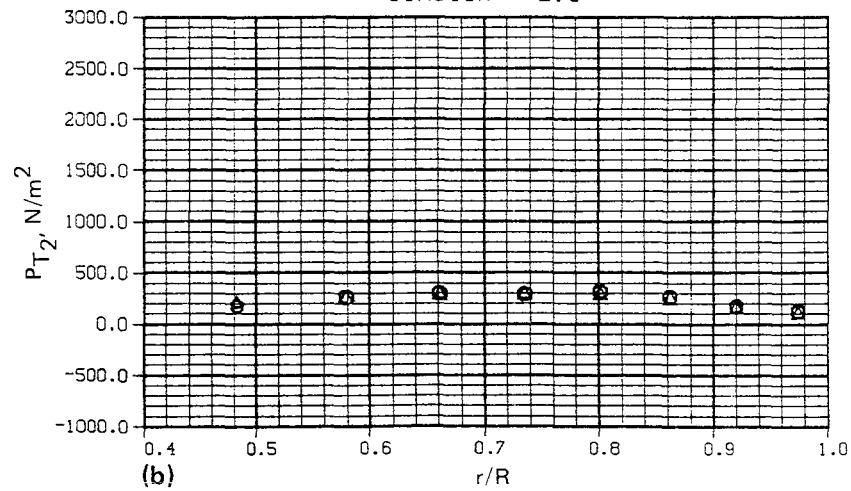
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 17. MASS FLOW: 23.73 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

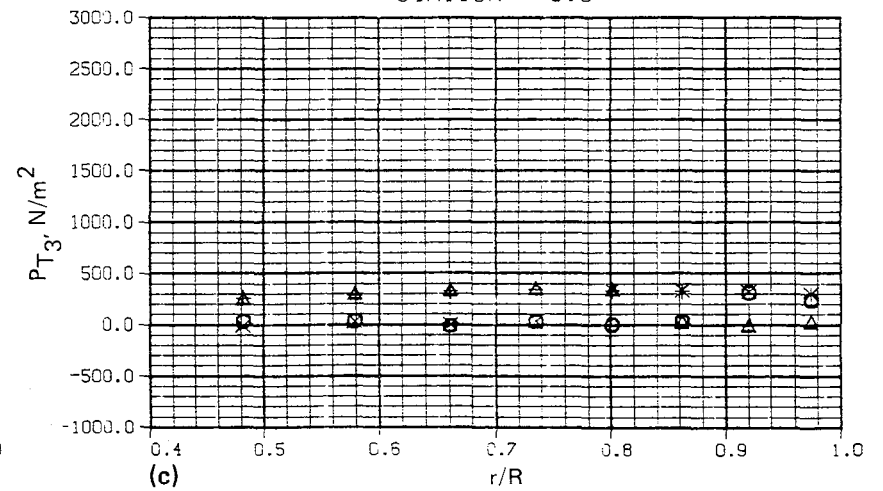


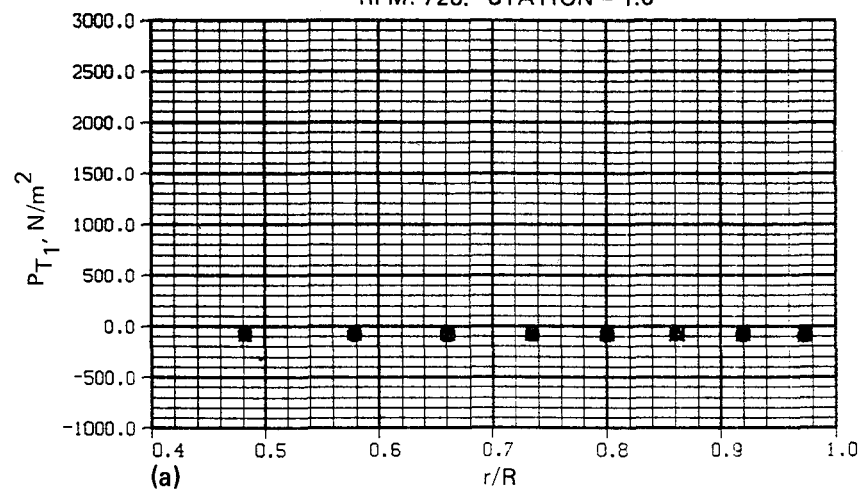
Figure D9.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

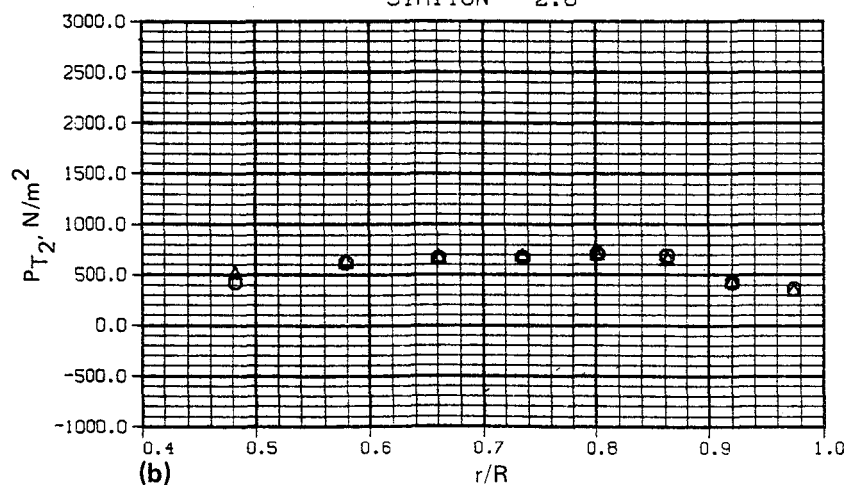
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 17. MASS FLOW: 37.34 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

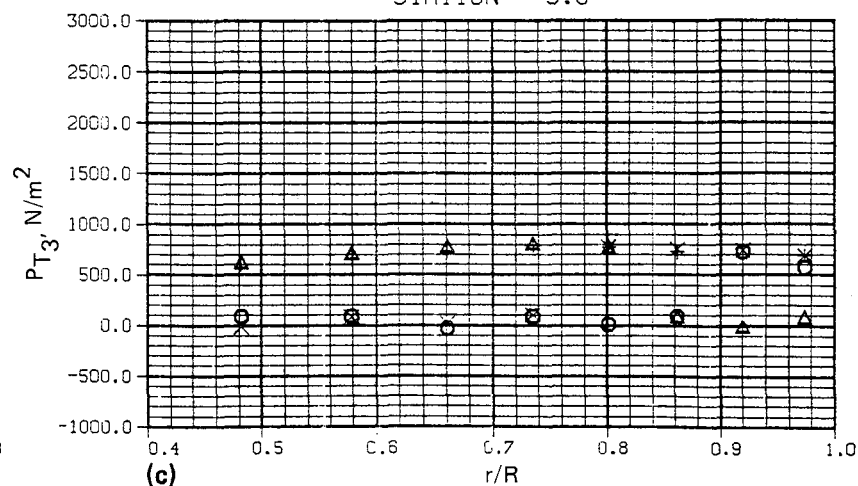


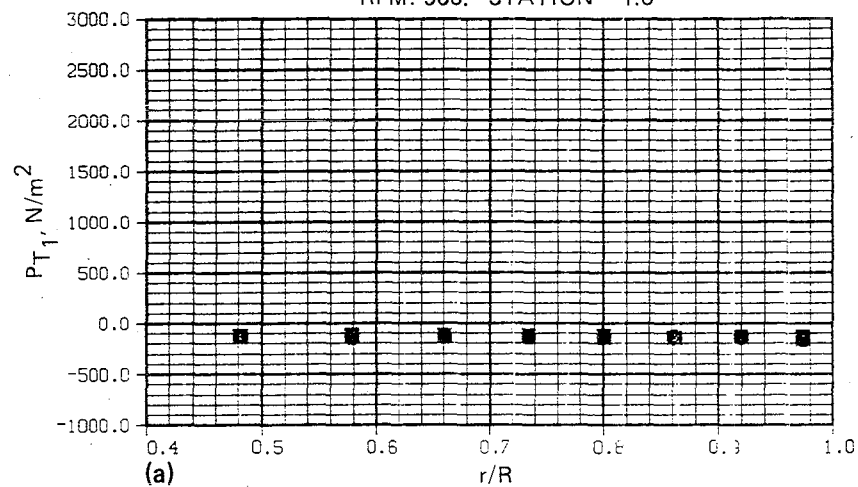
Figure D10.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

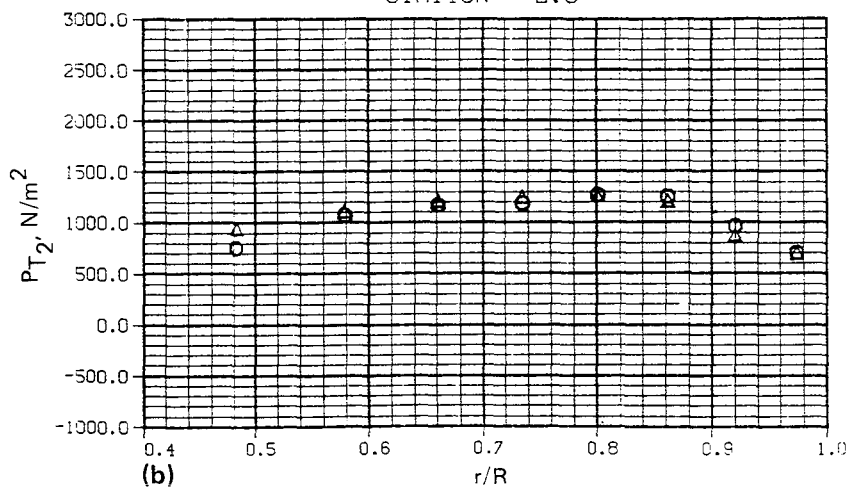
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 17. MASS FLOW: 50.83 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

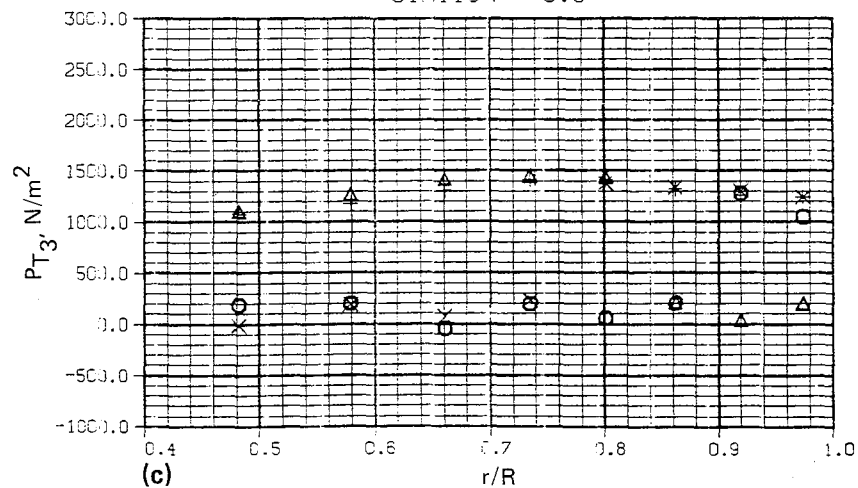


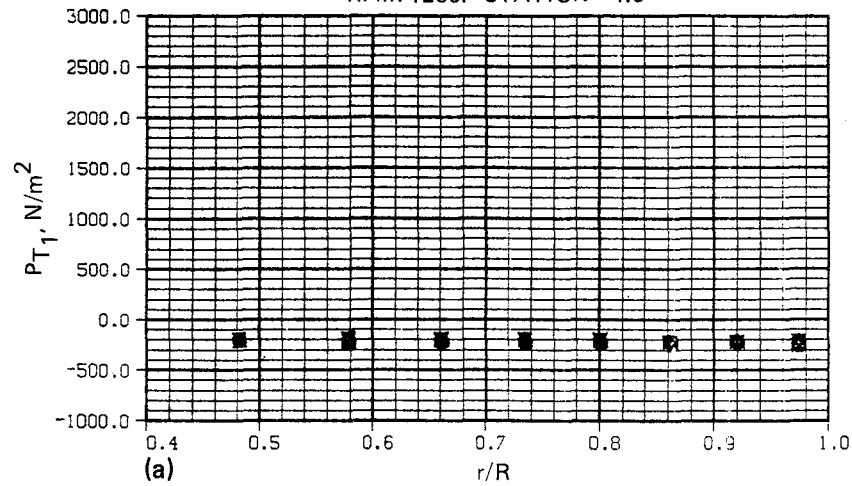
Figure D11.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

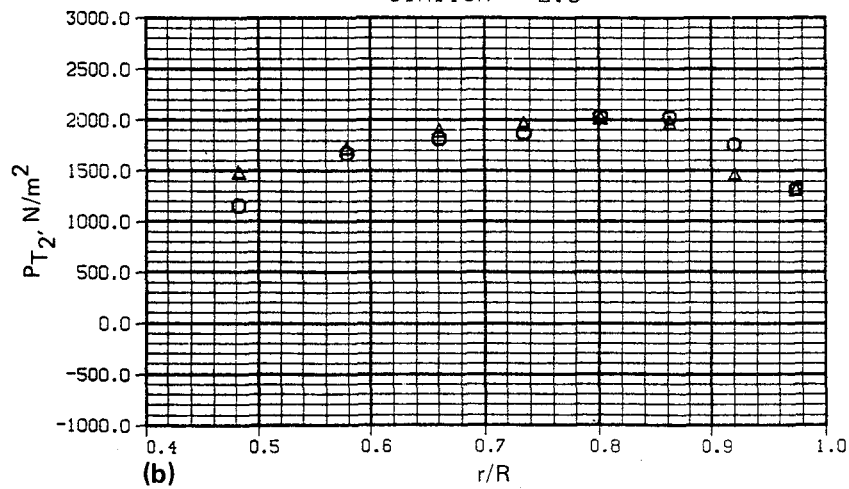
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 17. MASS FLOW: 65.41 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

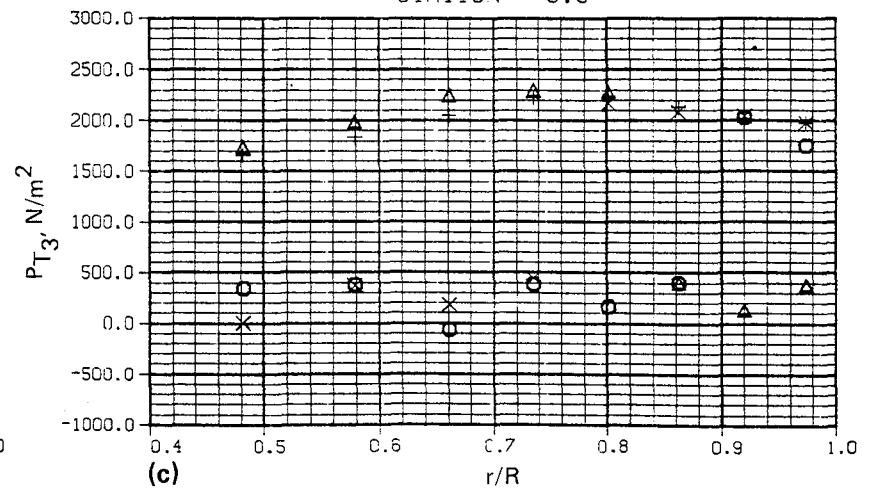


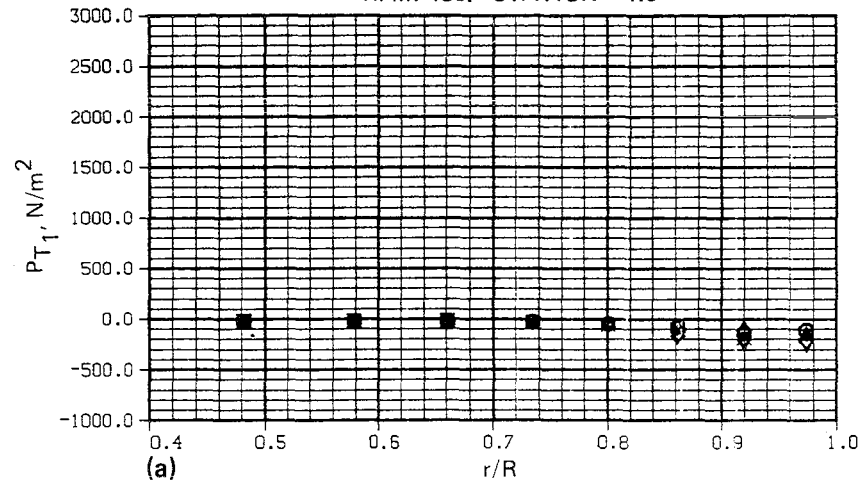
Figure D12.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

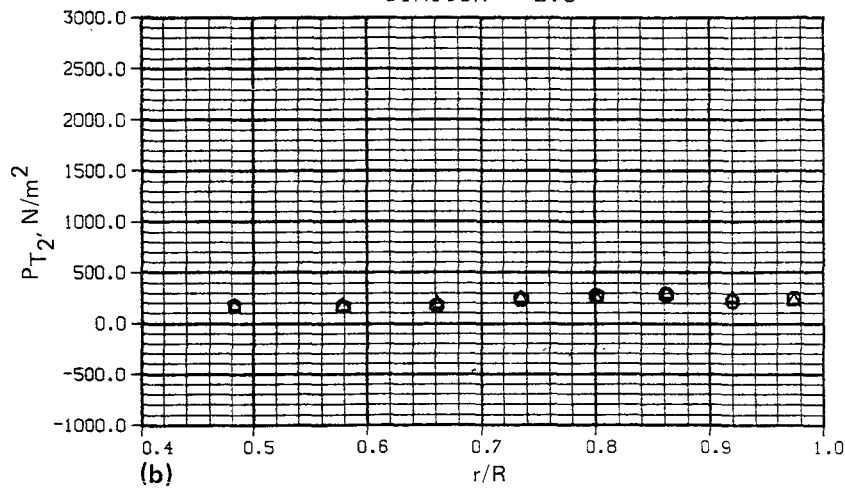
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 18. MASS FLOW: 5.41 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

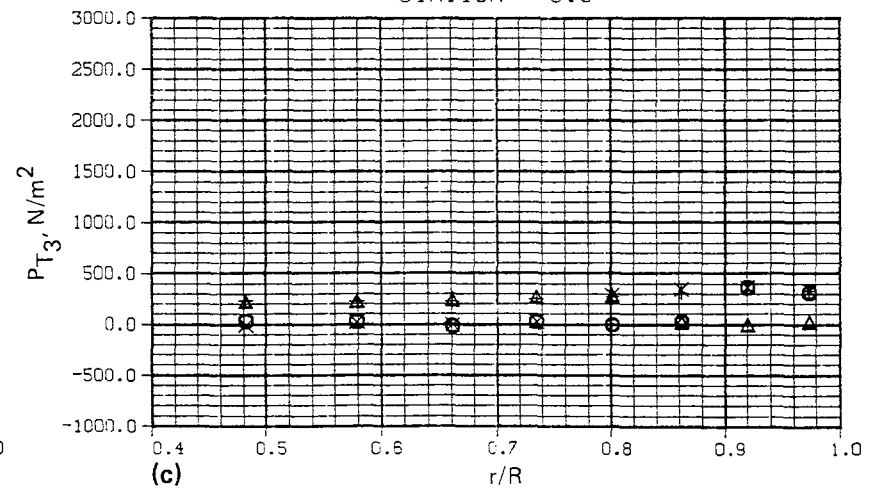


Figure D13.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 18. MASS FLOW: 18.93 slugs/sec

RPM: 720. STATION = 1.0

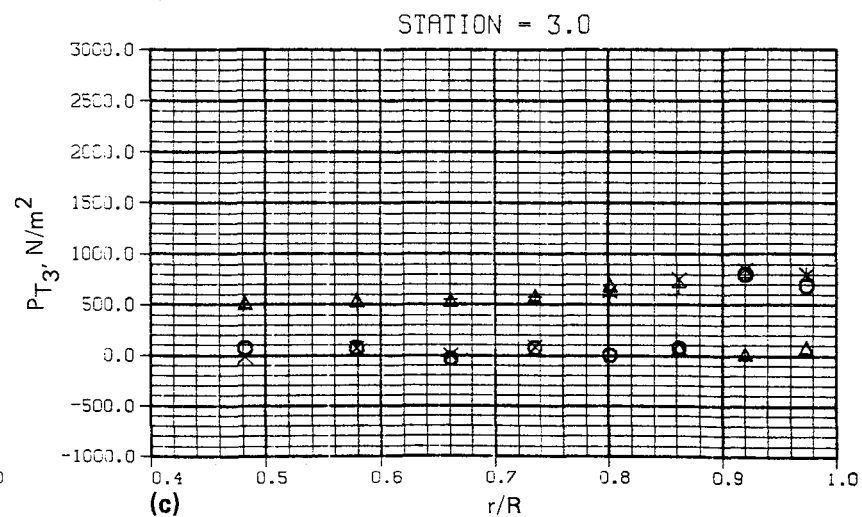
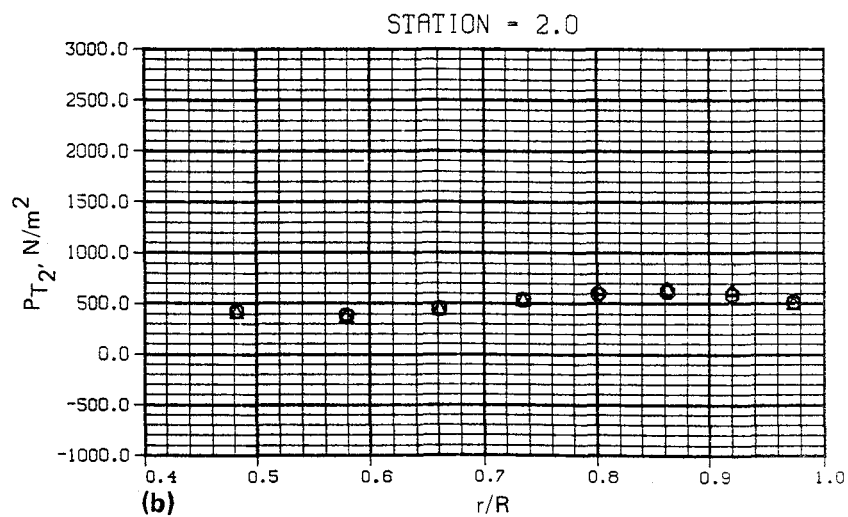
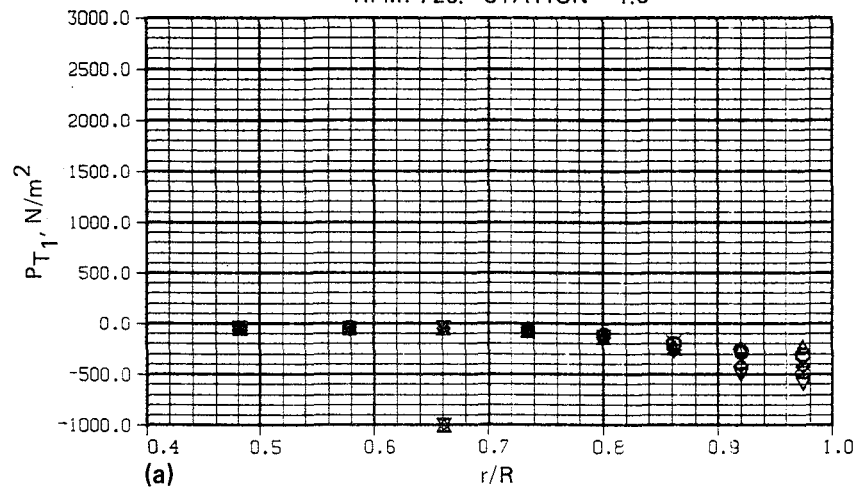


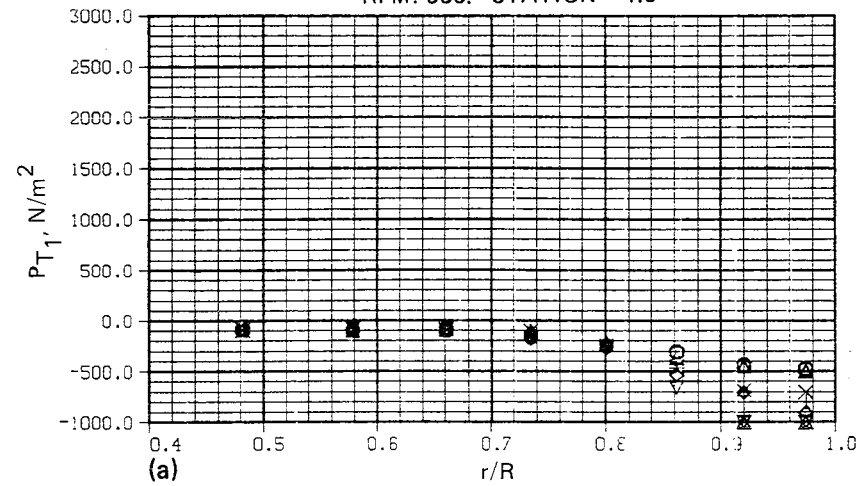
Figure D14.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

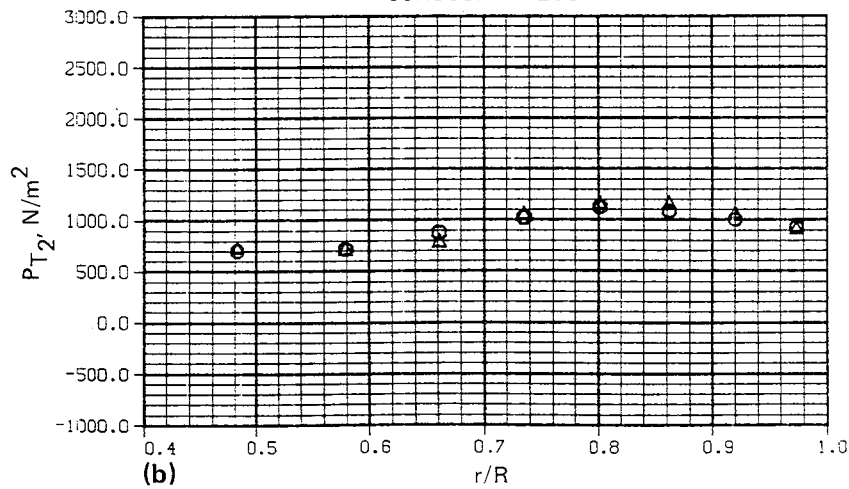
BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 18. MASS FLOW: 12.71 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

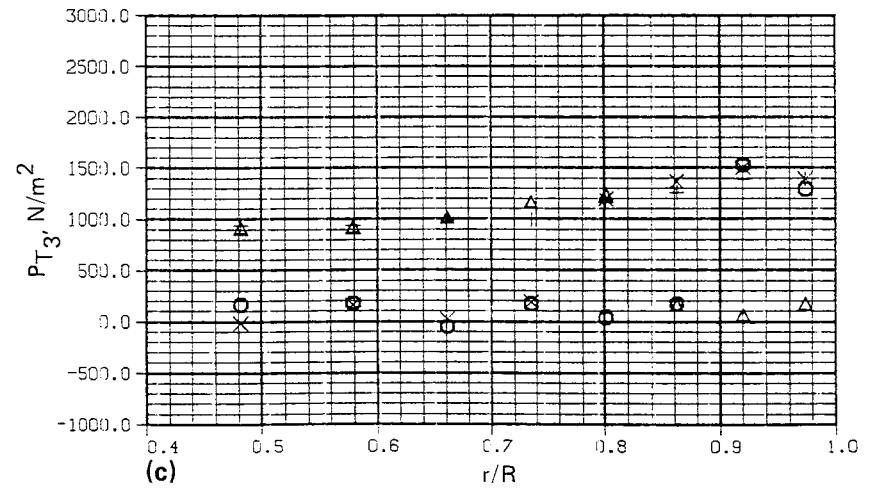


Figure D15.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 24.9

RUN NO: 18. MASS FLOW: 15.35 slugs/sec

RPM: 1200. STATION = 1.0

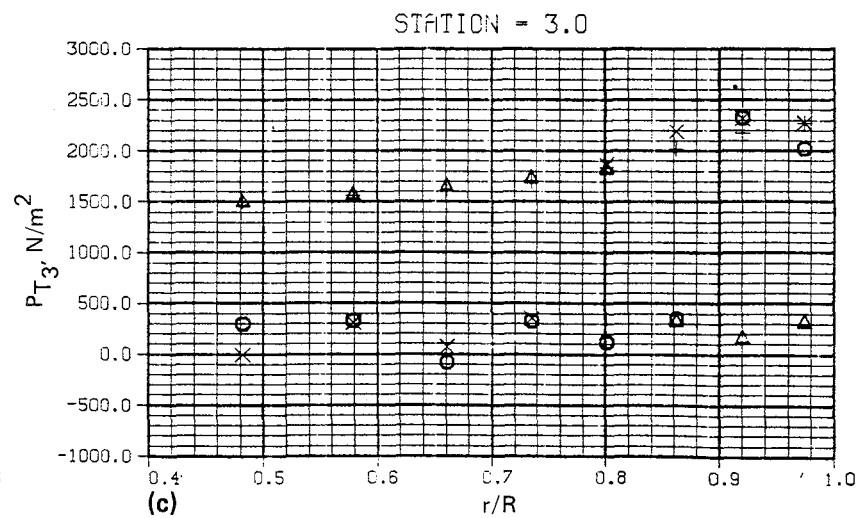
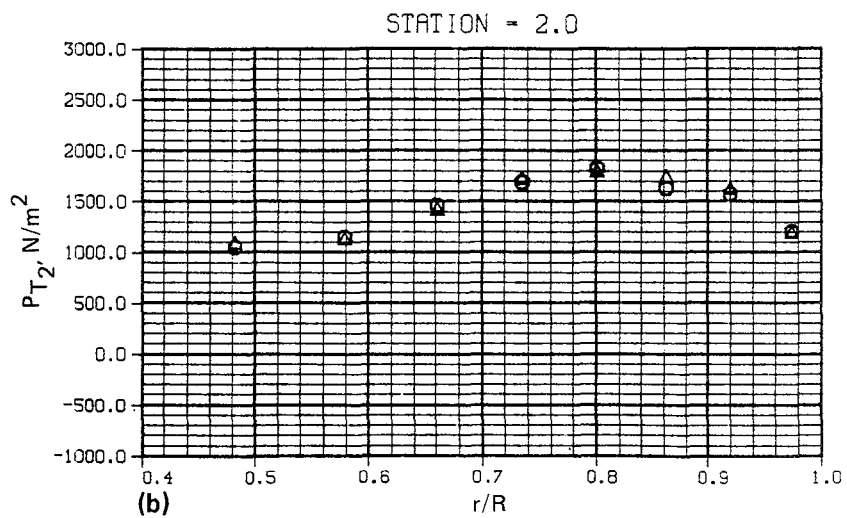
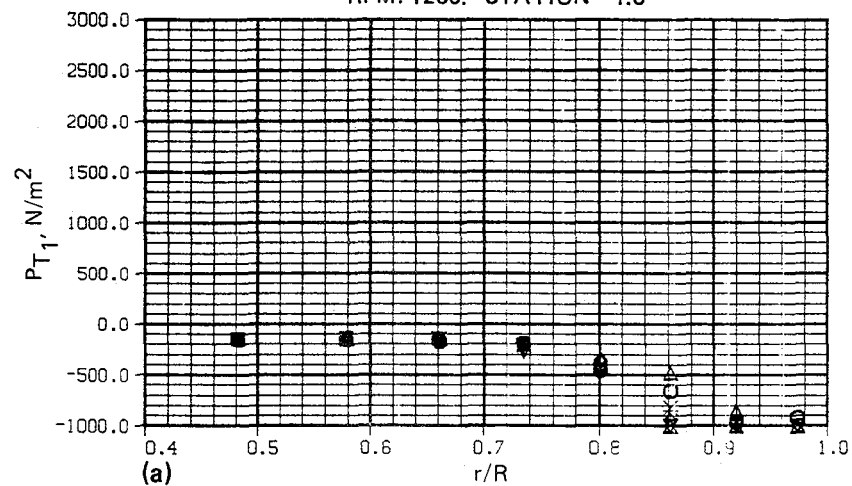


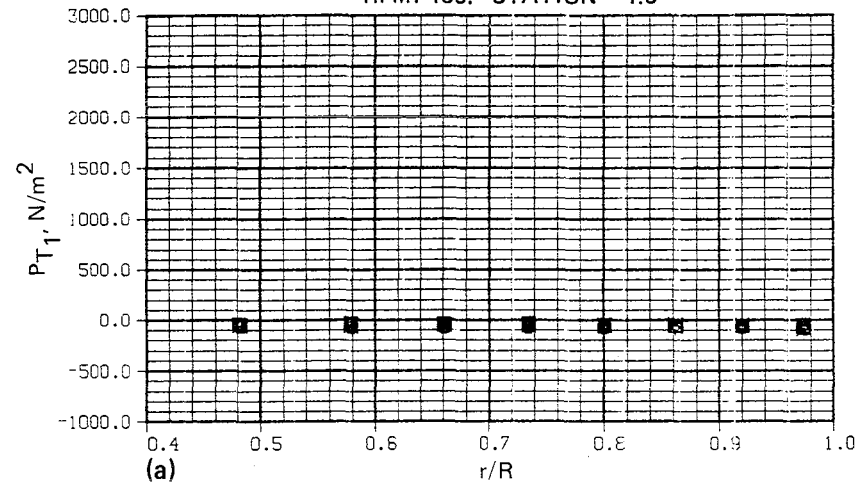
Figure D16.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

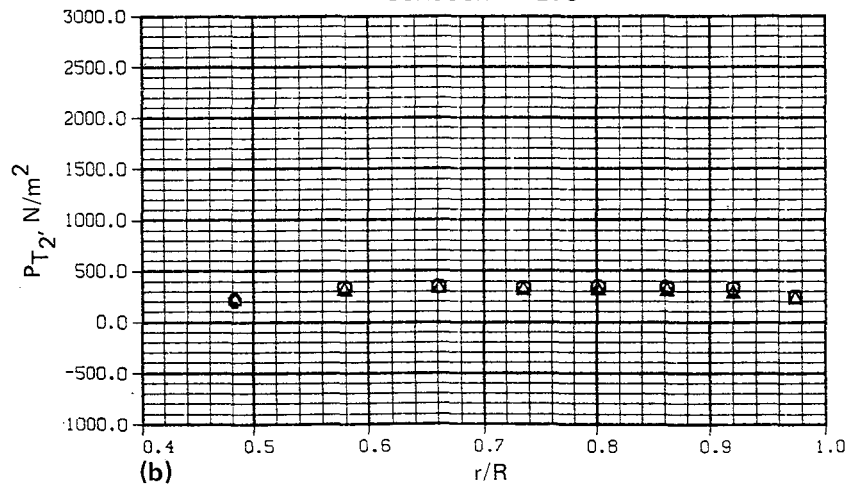
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 27. MASS FLOW: 54.83 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

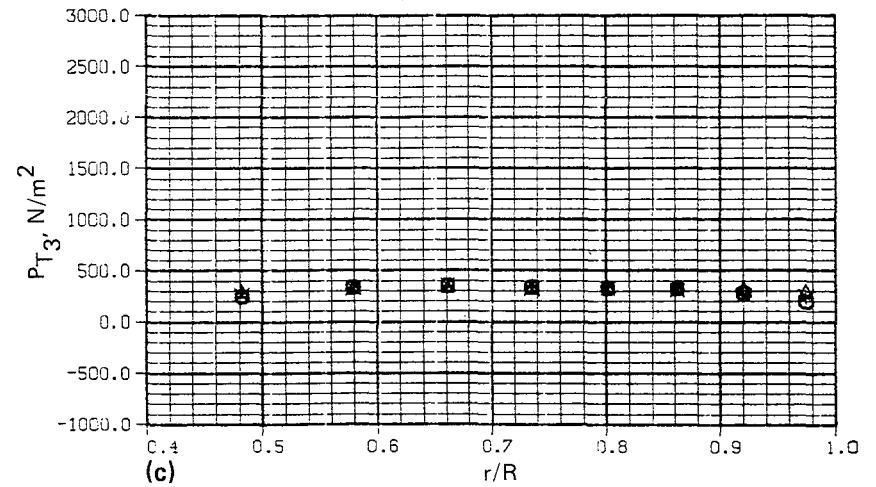


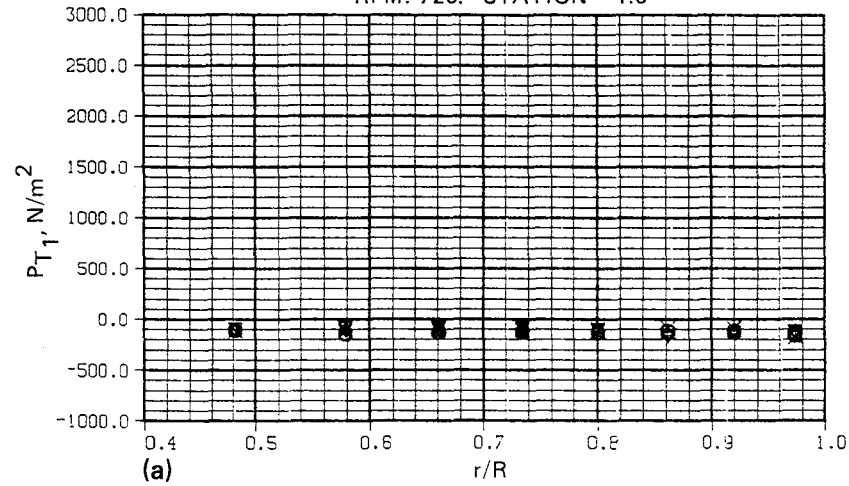
Figure D17.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

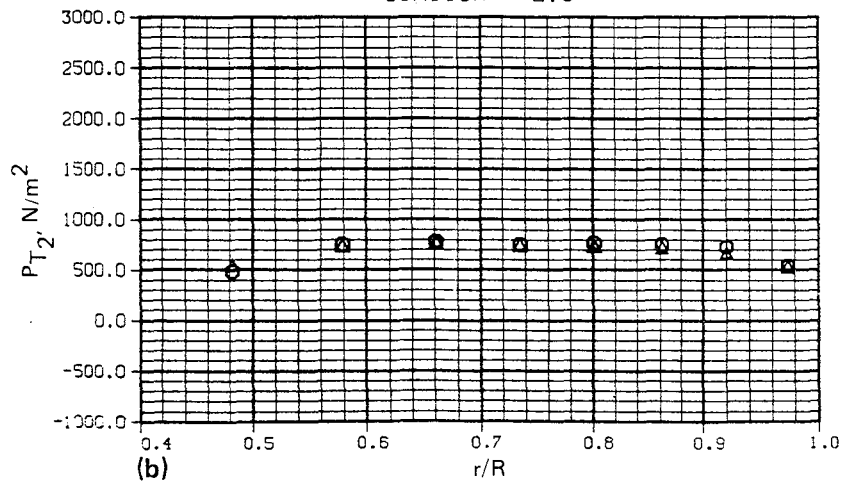
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 28. MASS FLOW: 82.50 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

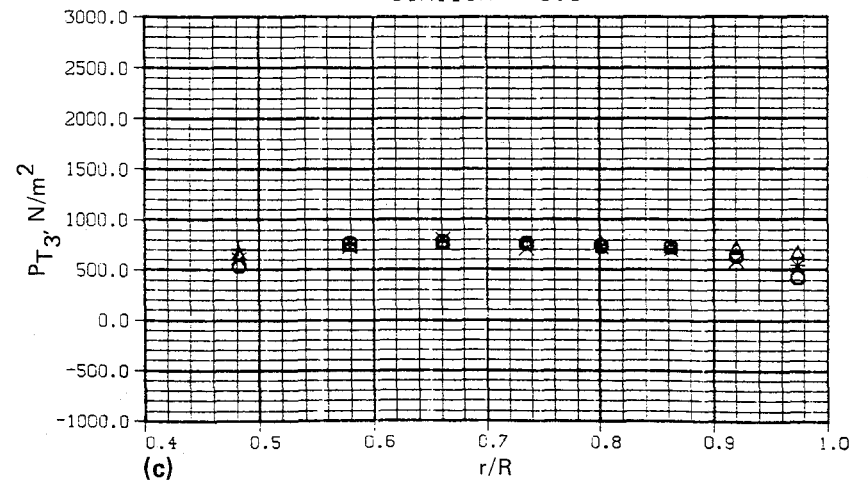


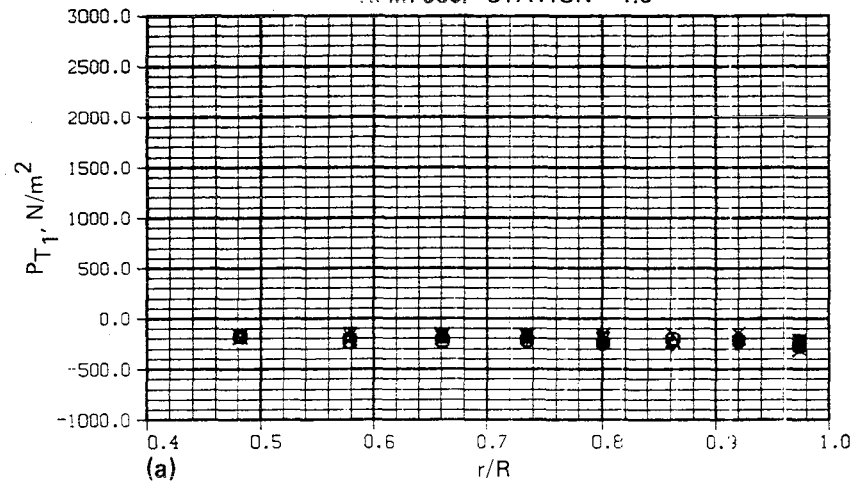
Figure D18.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

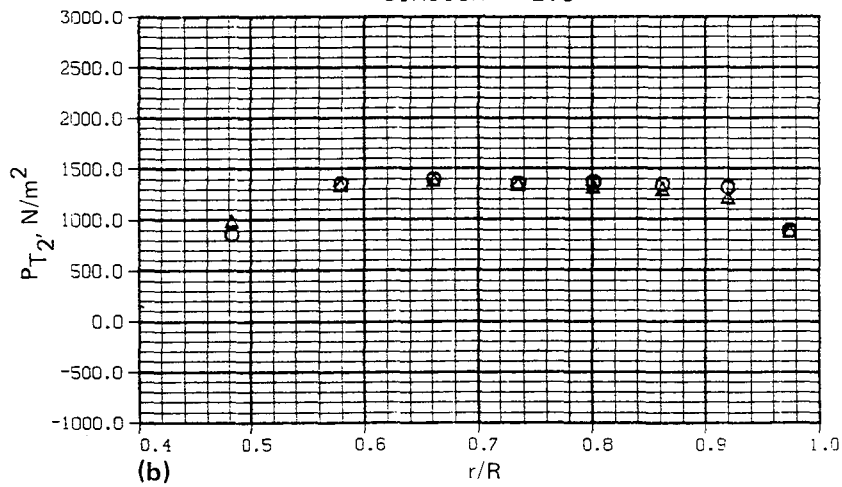
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 29. MASS FLOW: 111.07 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

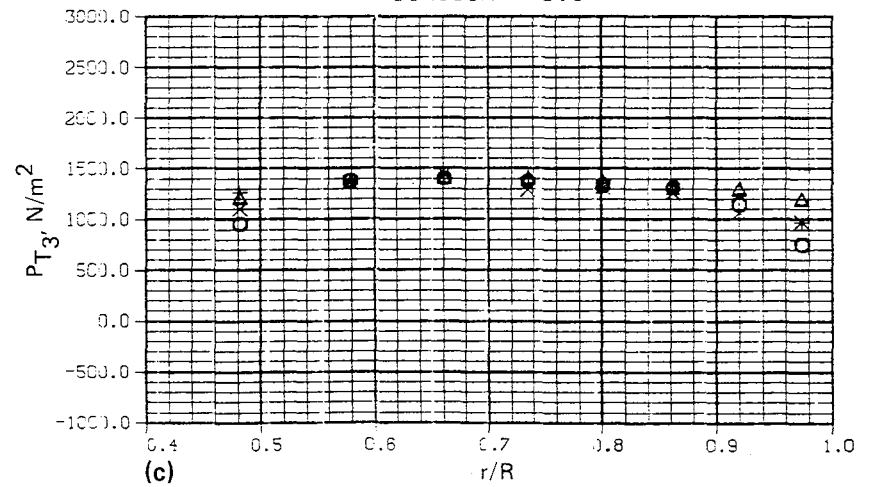


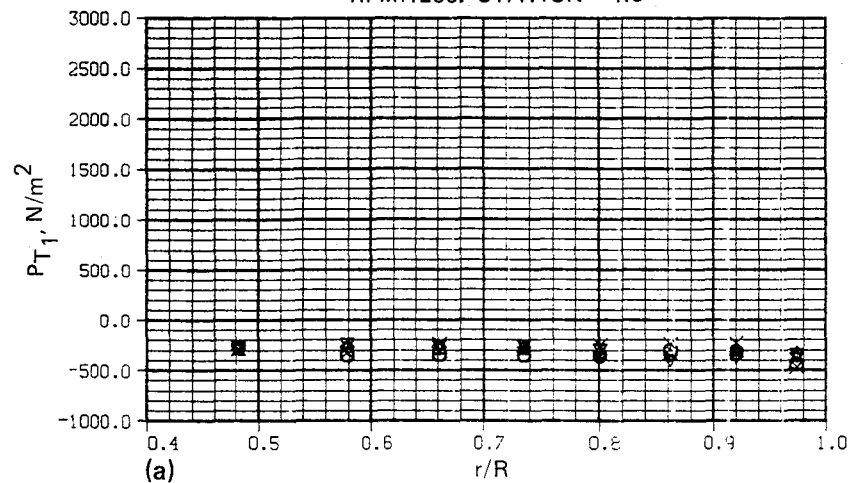
Figure D19.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

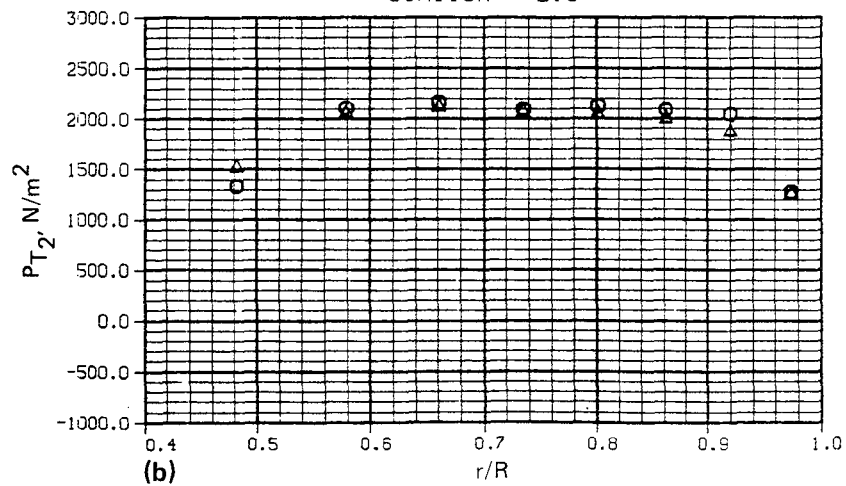
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 30. MASS FLOW: 138.98 slugs/sec

RPM:1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

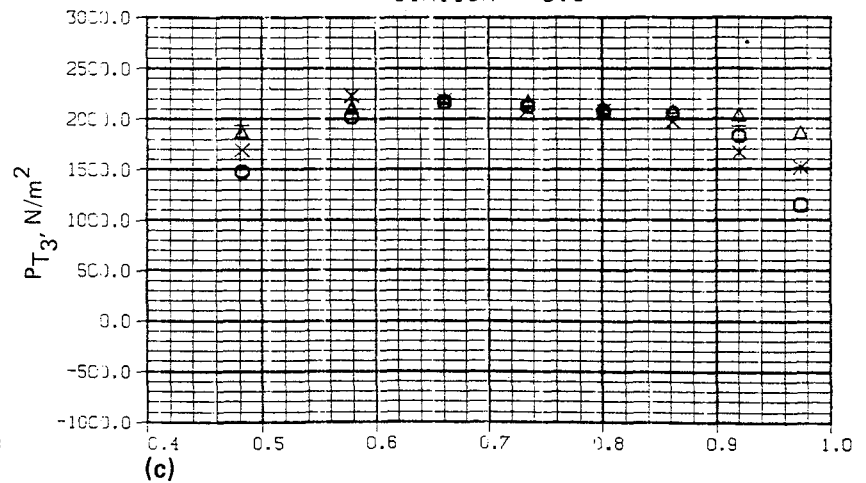


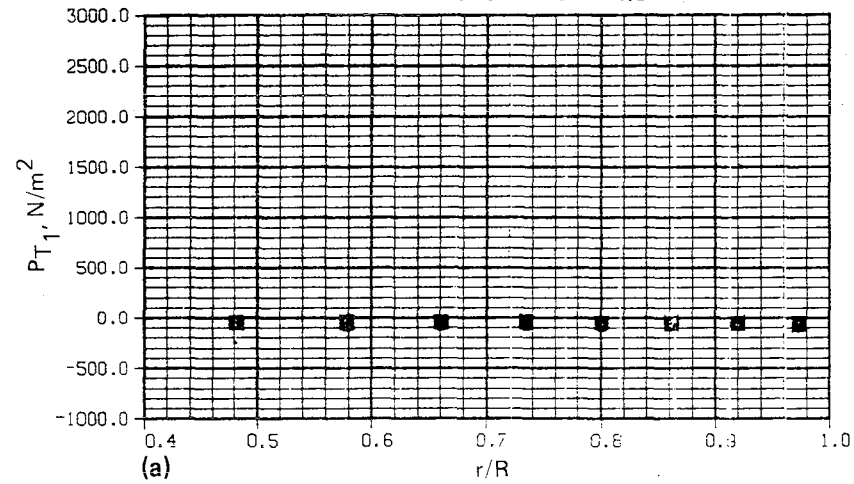
Figure D20.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

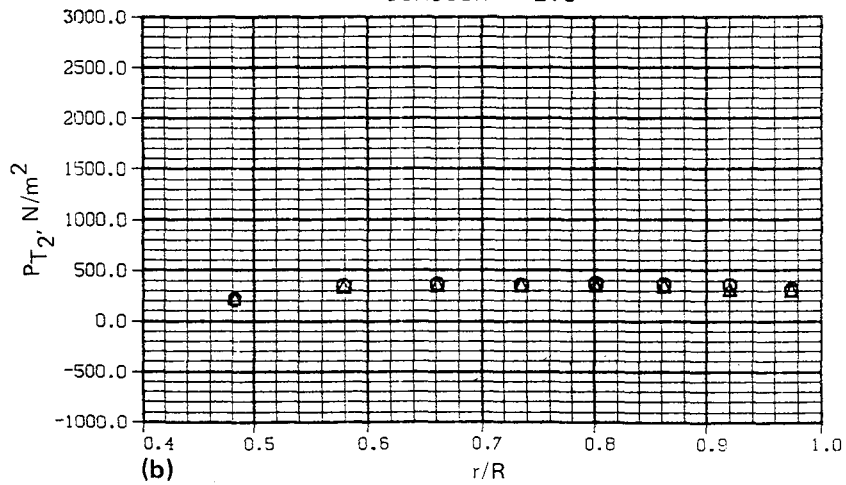
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 31. MASS FLOW: 52.39 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

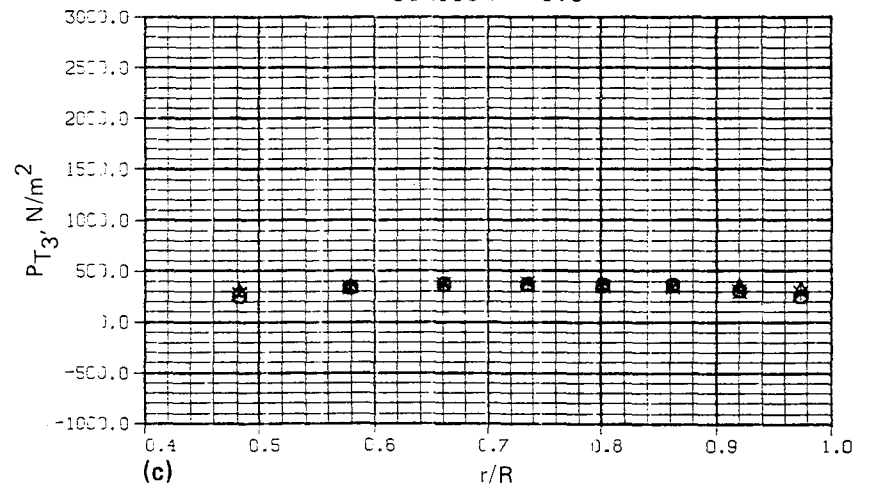


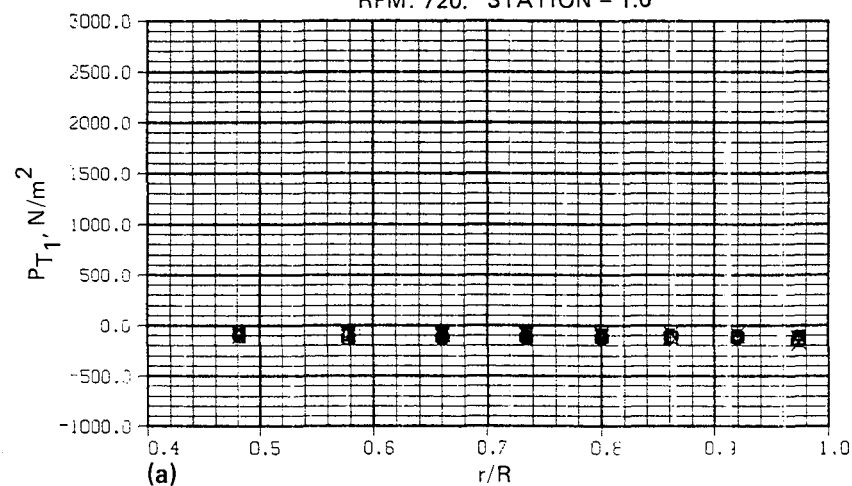
Figure D21.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

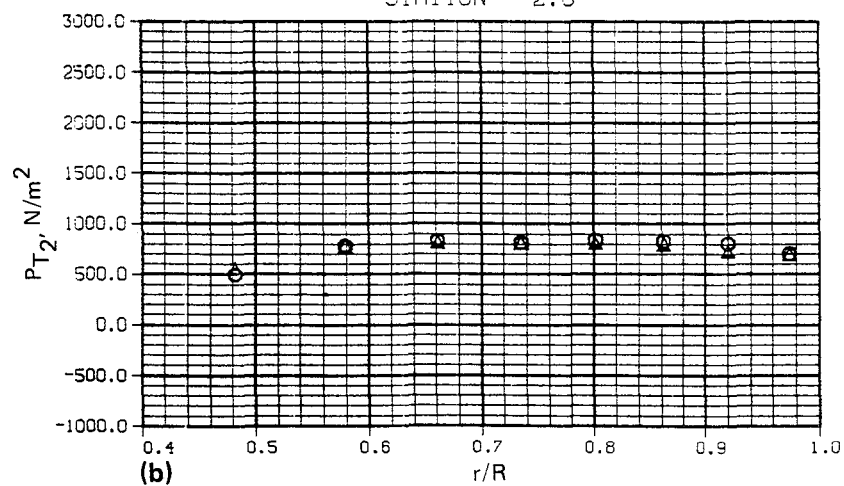
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 32. MASS FLOW: 79.69 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

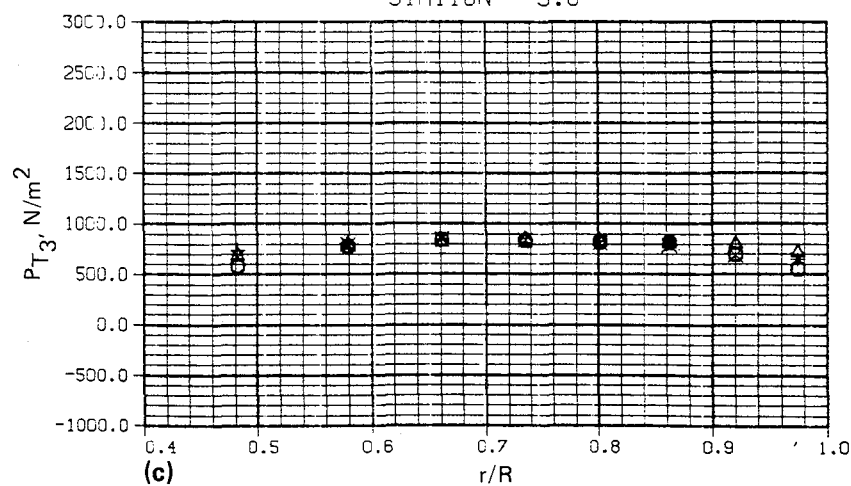


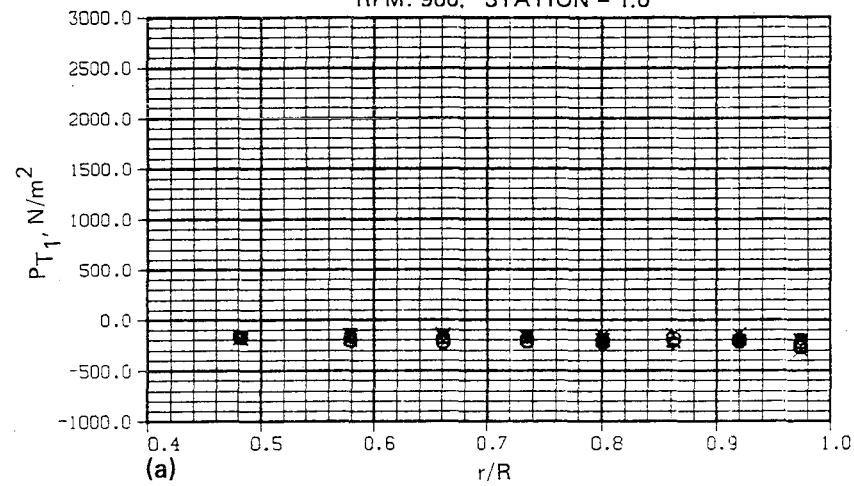
Figure D22.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

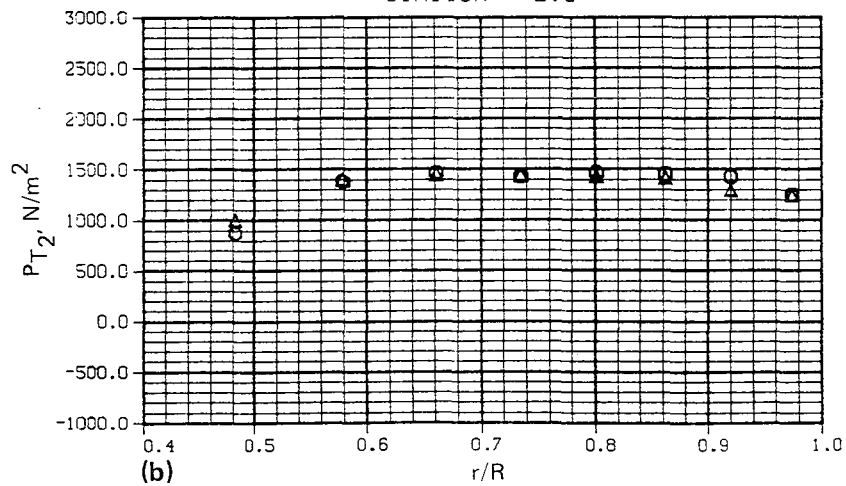
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 33. MASS FLOW: 106.73 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

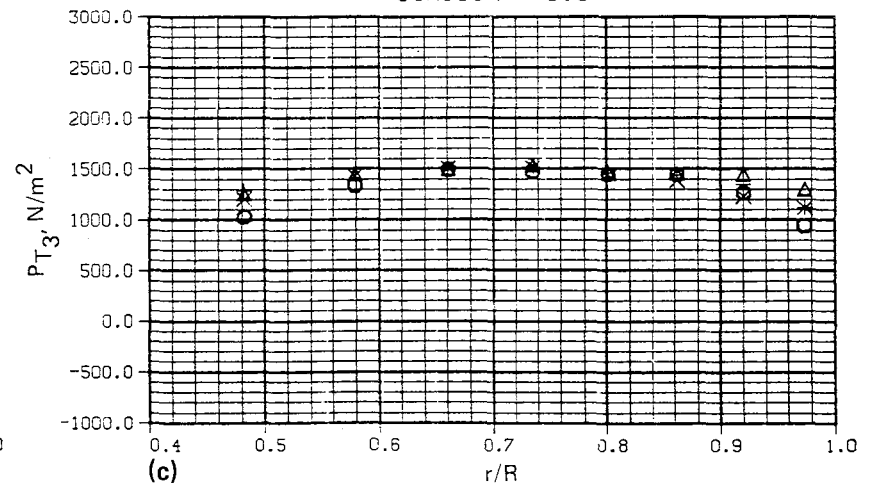


Figure D23.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 34 MASS FLOW: 133.66 slugs/sec

RPM: 1200. STATION = 1.0

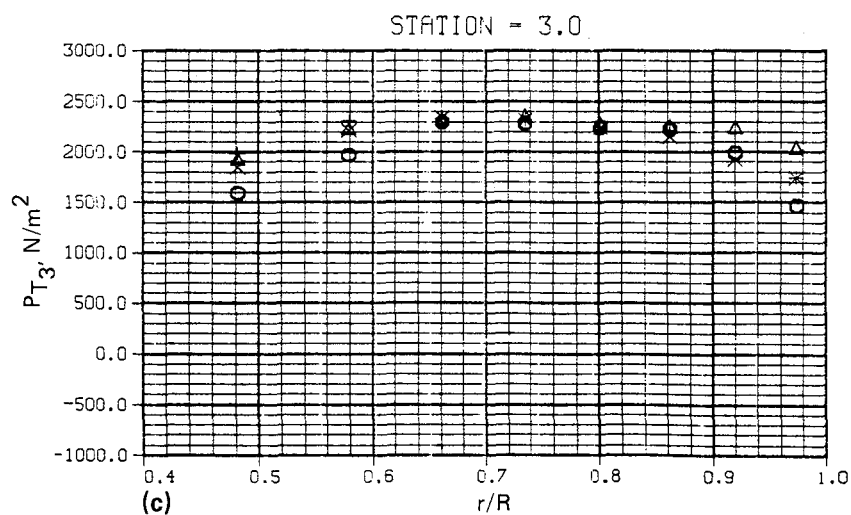
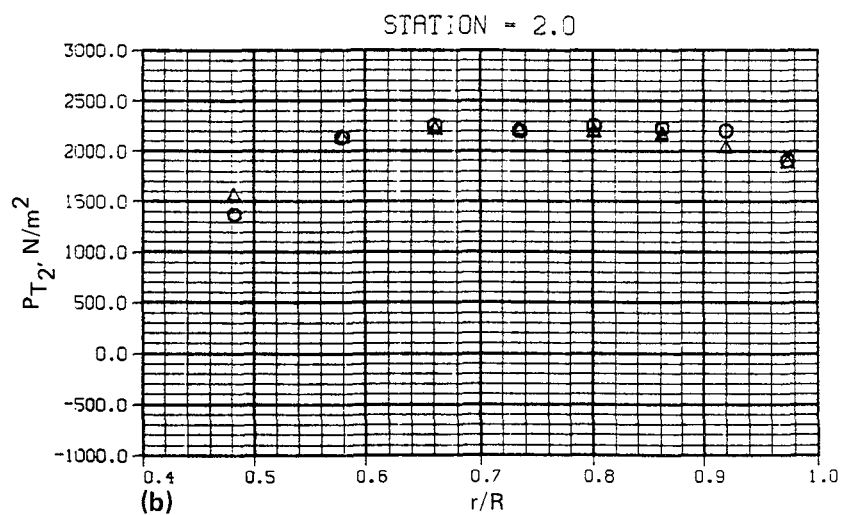
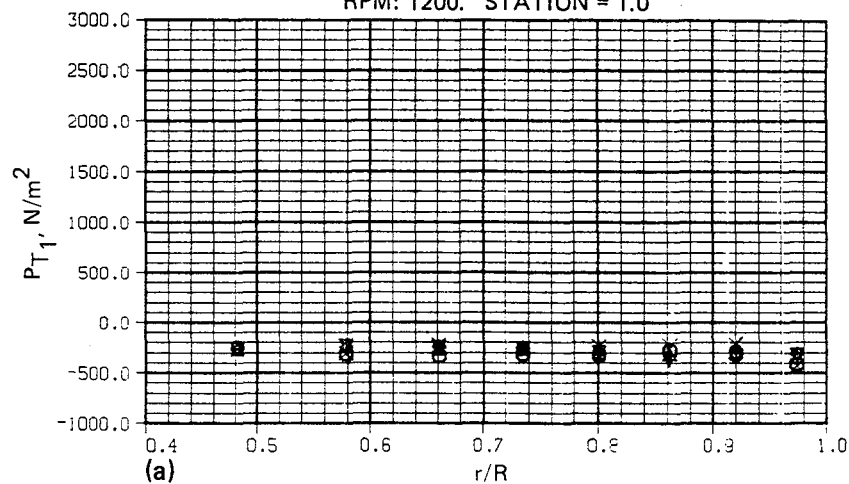


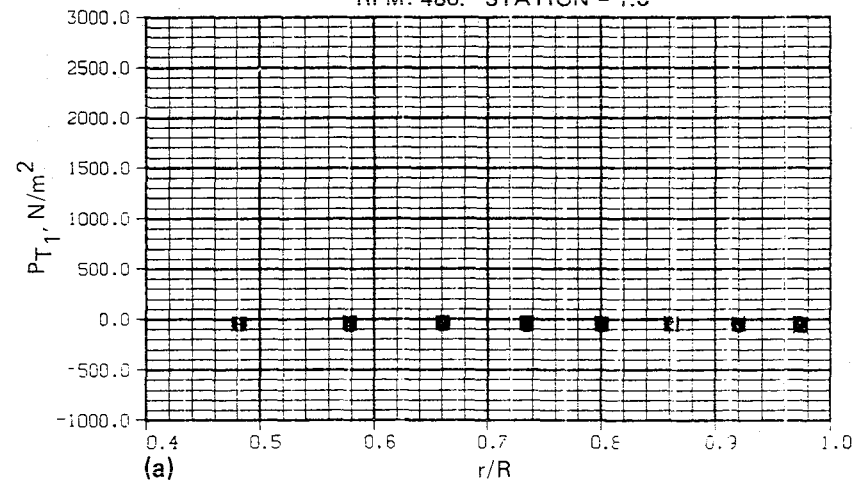
Figure D24.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

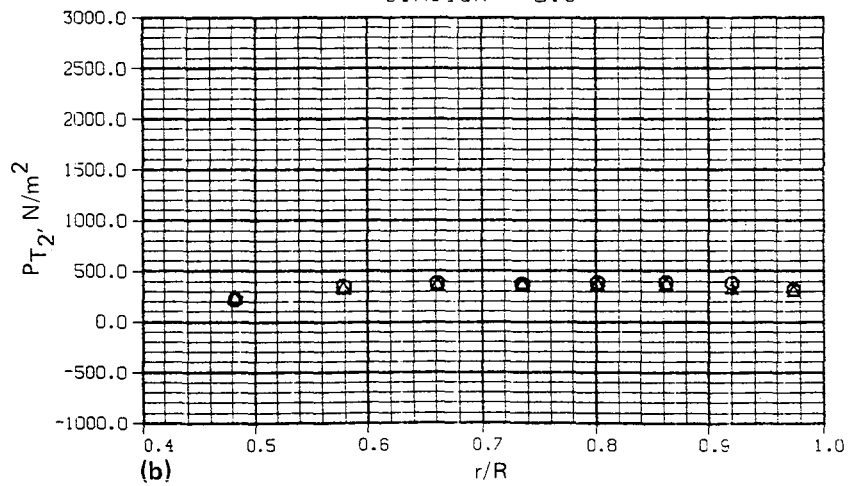
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 35. MASS FLOW: 49.22 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

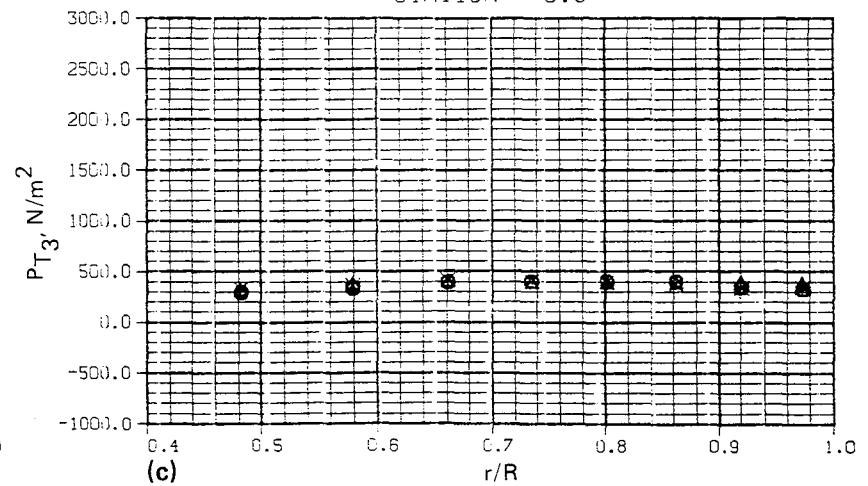


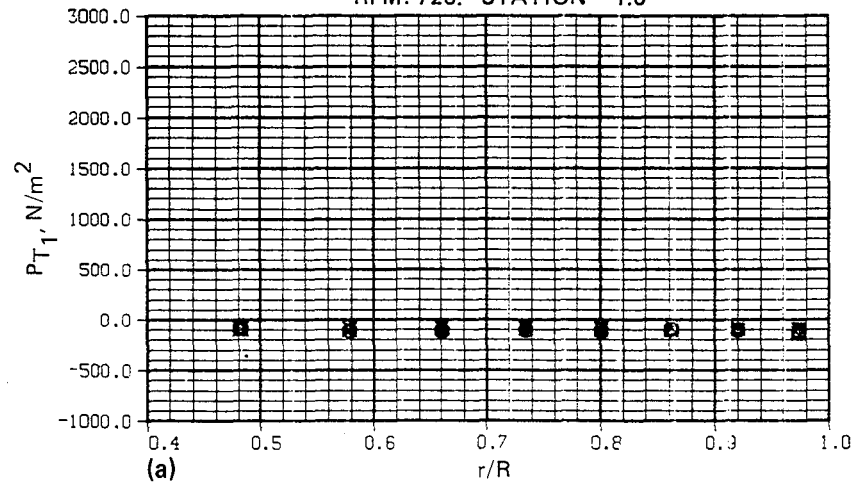
Figure D25.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

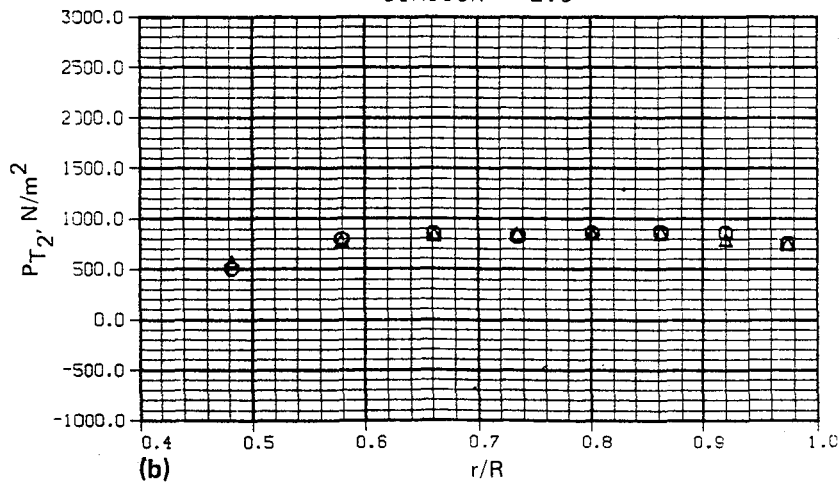
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 36. MASS FLOW: 74.47 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

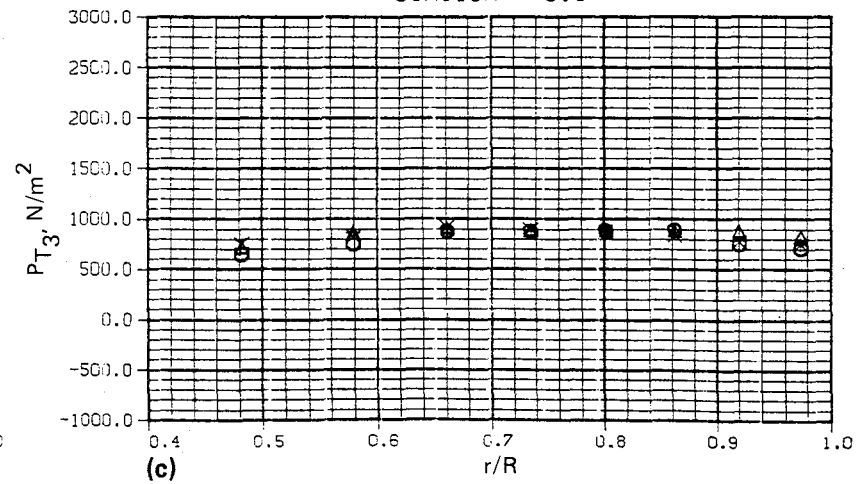


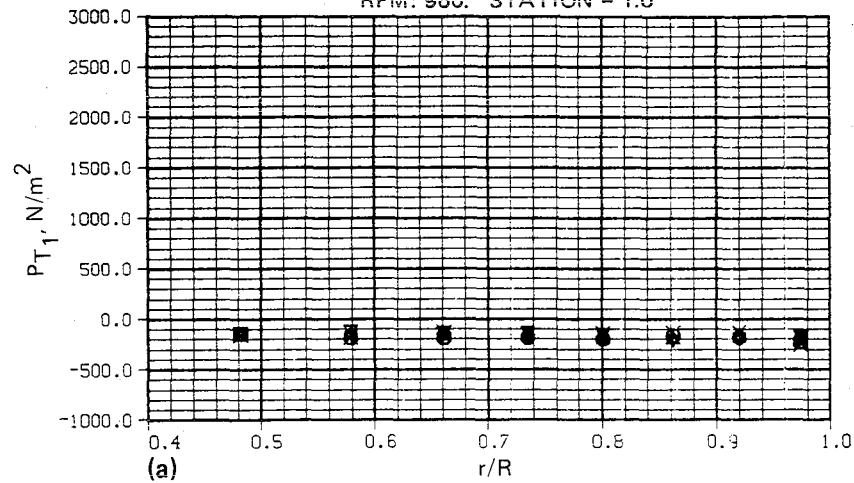
Figure D26.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

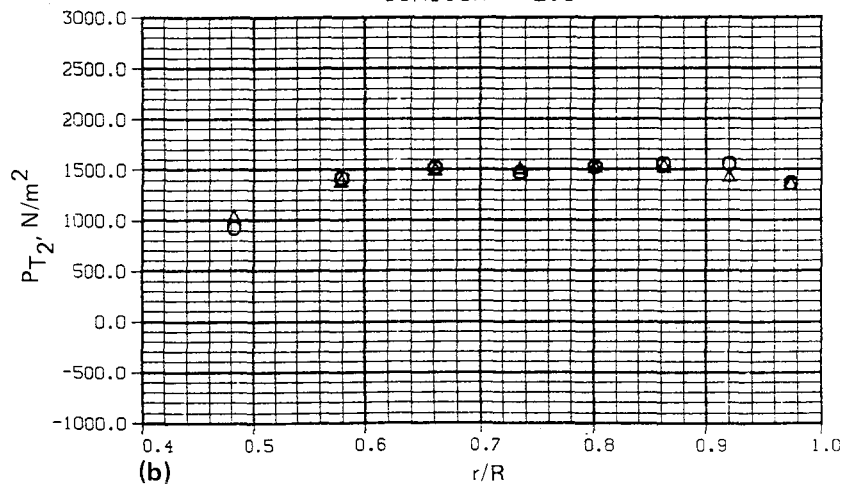
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 37. MASS FLOW: 100.53 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

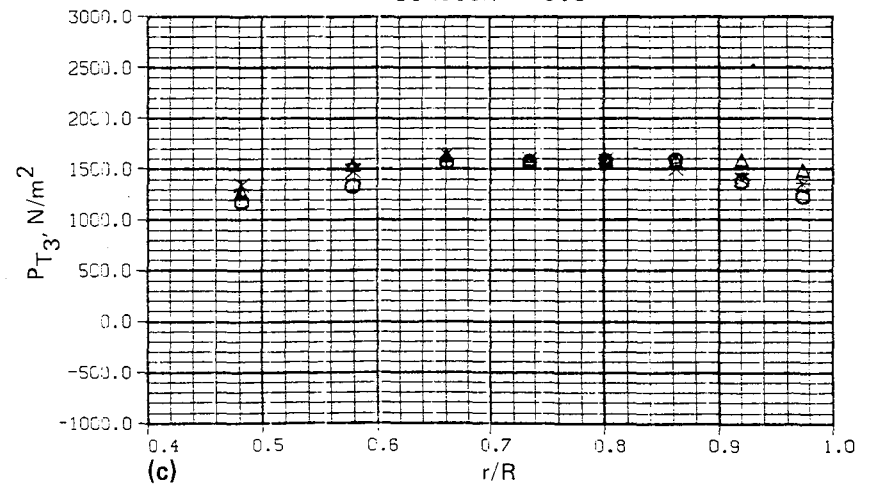


Figure D27.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 38. MASS FLOW: 126.04 slugs/sec

RPM: 1200. STATION = 1.0

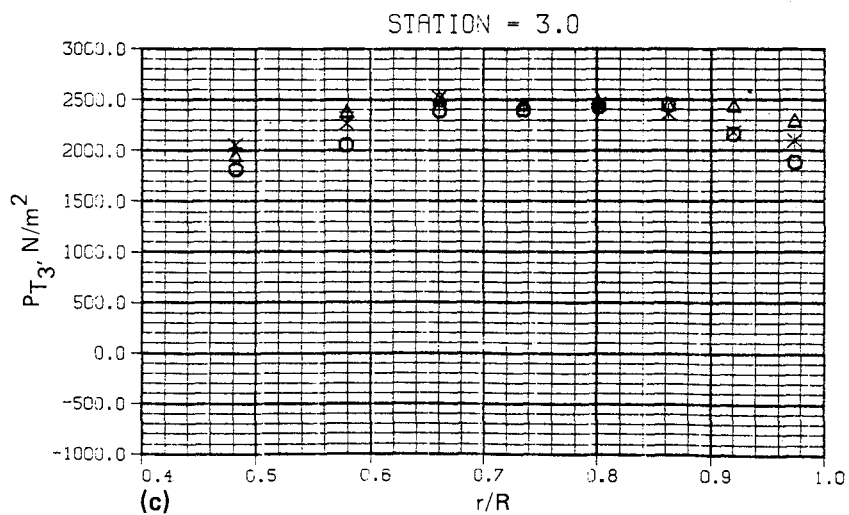
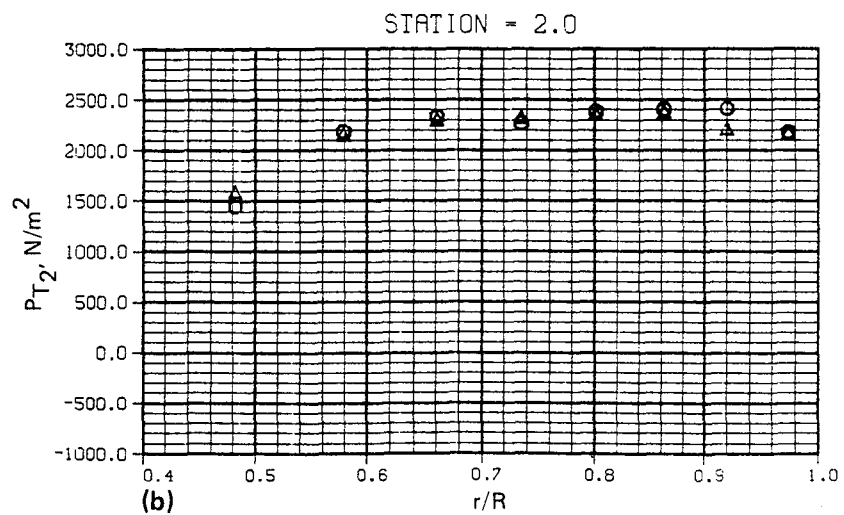
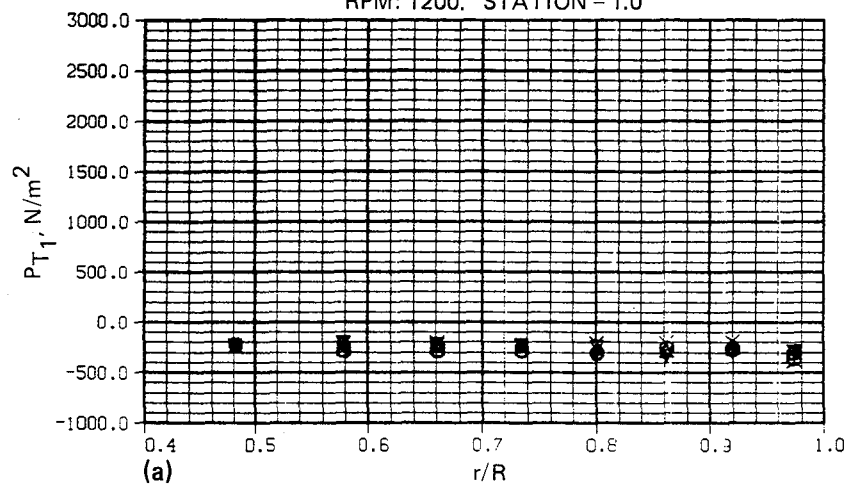
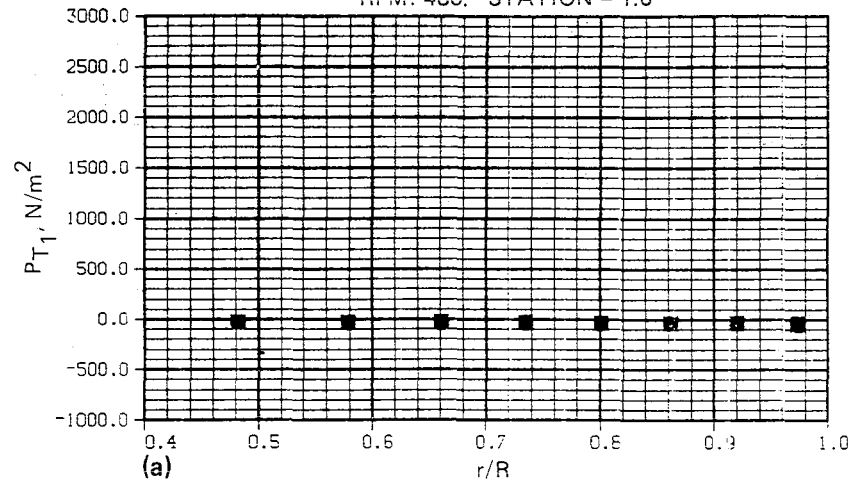
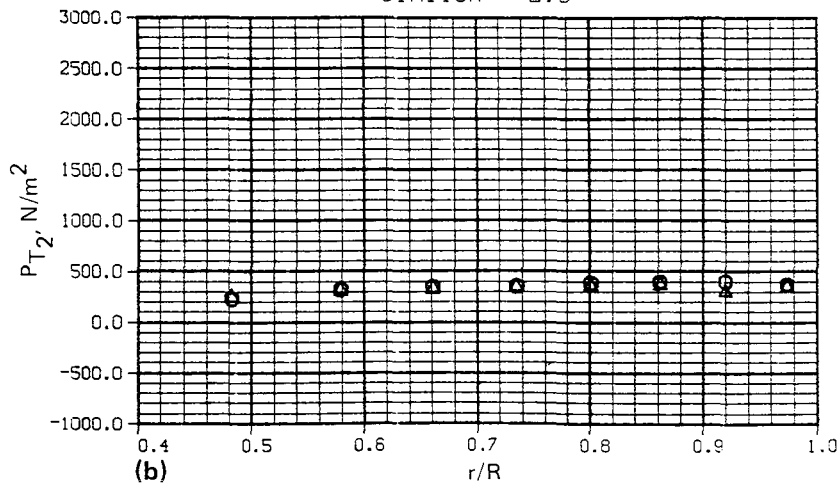


Figure D28.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 36.0
 RUN NO: 39. MASS FLOW: 42.03 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

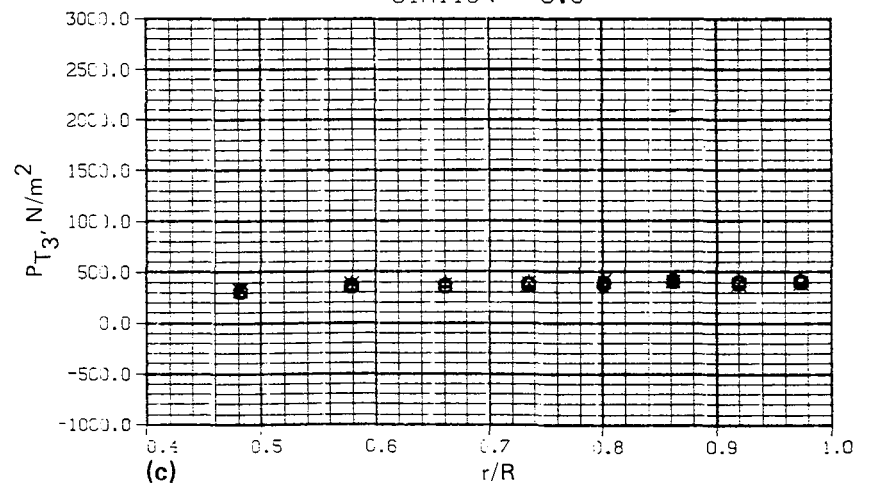


Figure D29.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 40. MASS FLOW: 64.07 slugs/sec

RPM: 720. STATION = 1.0

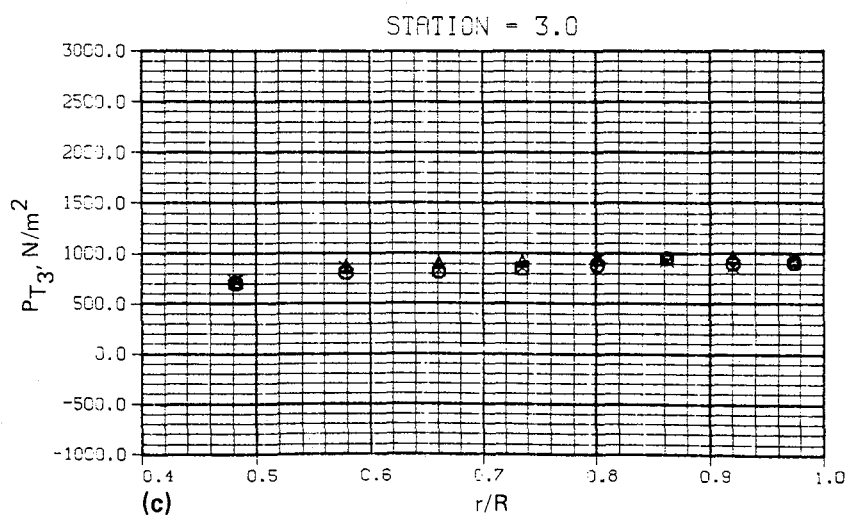
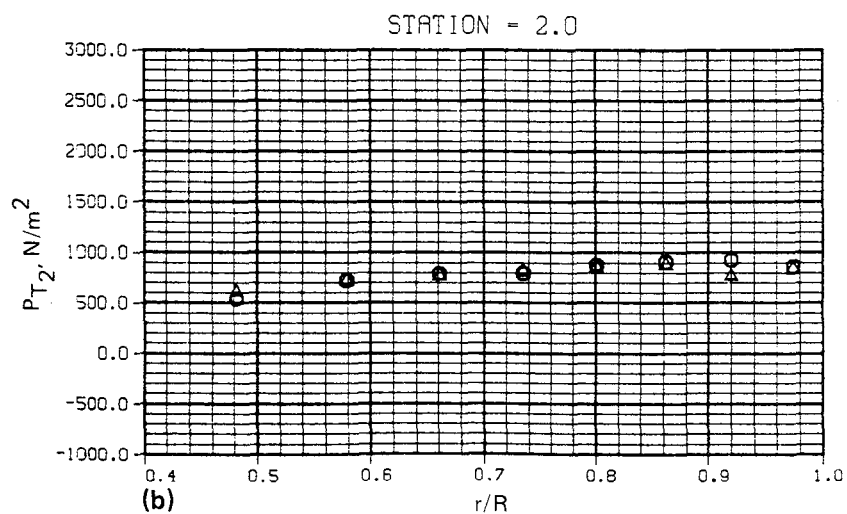
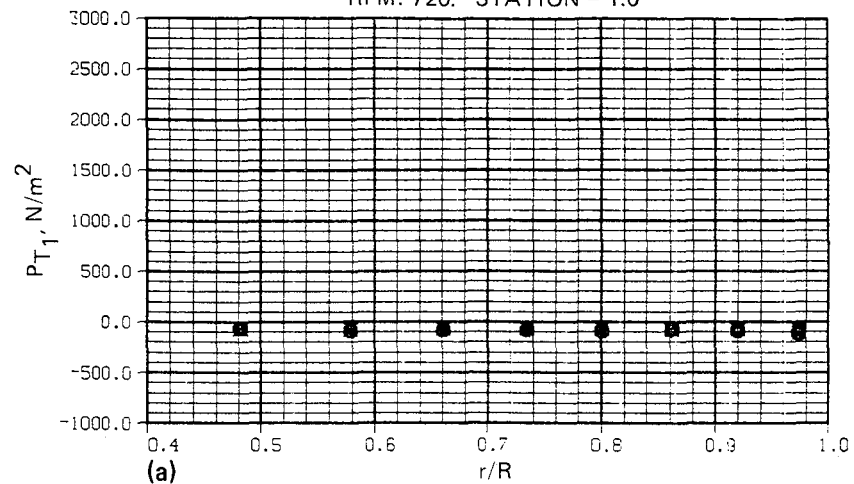


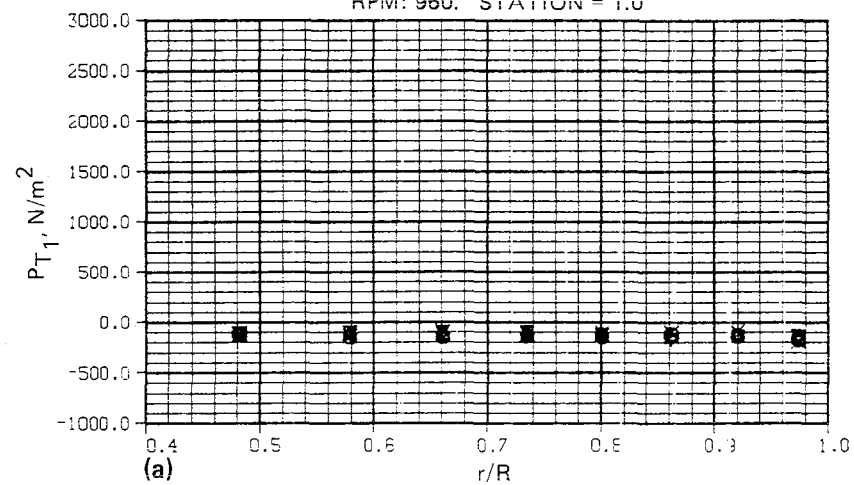
Figure D30.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

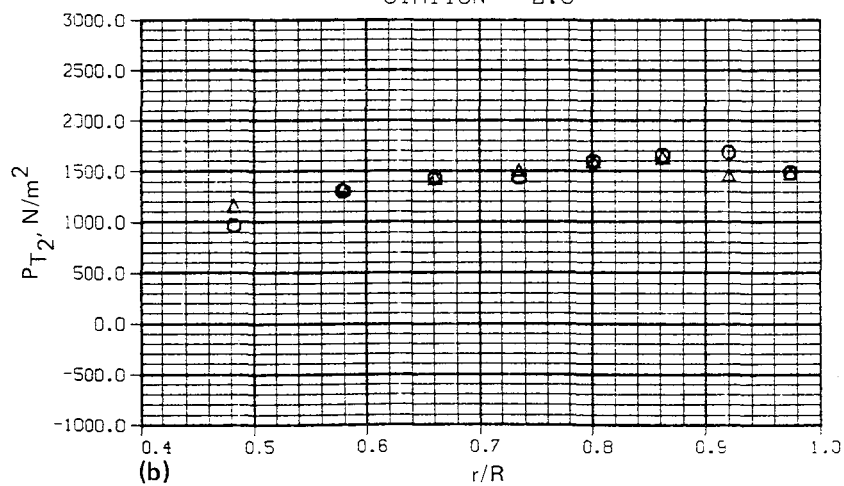
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 41. MASS FLOW: 87.06 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

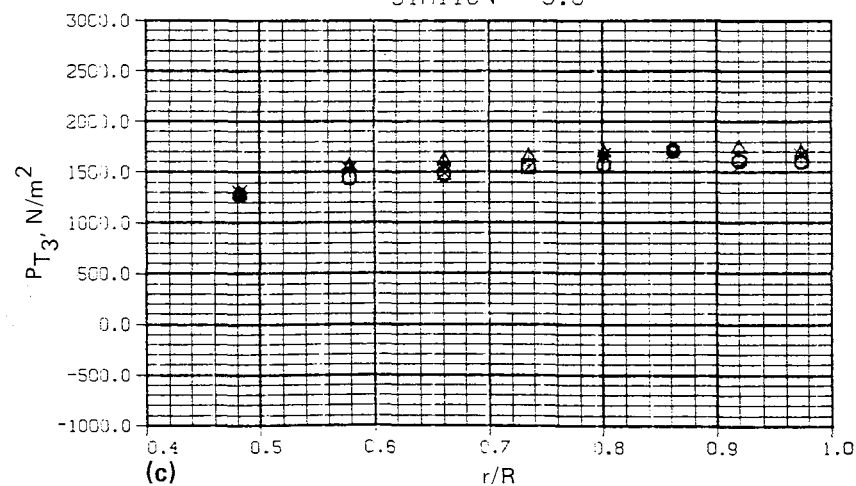


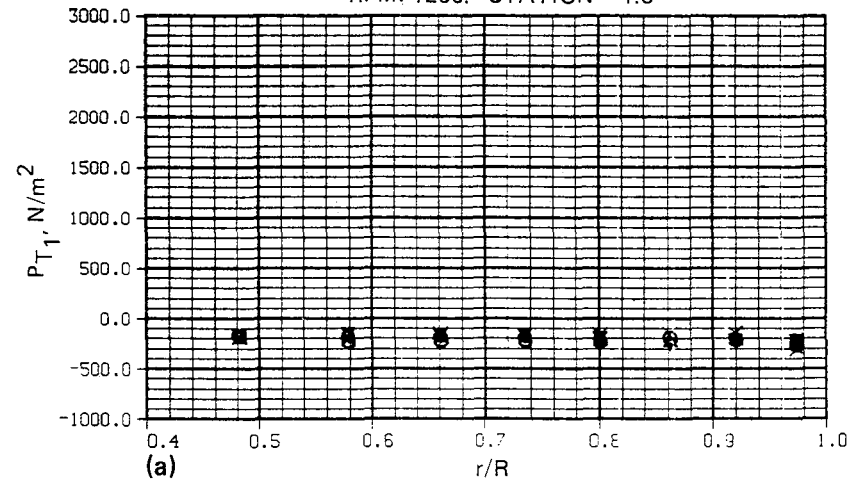
Figure D31.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

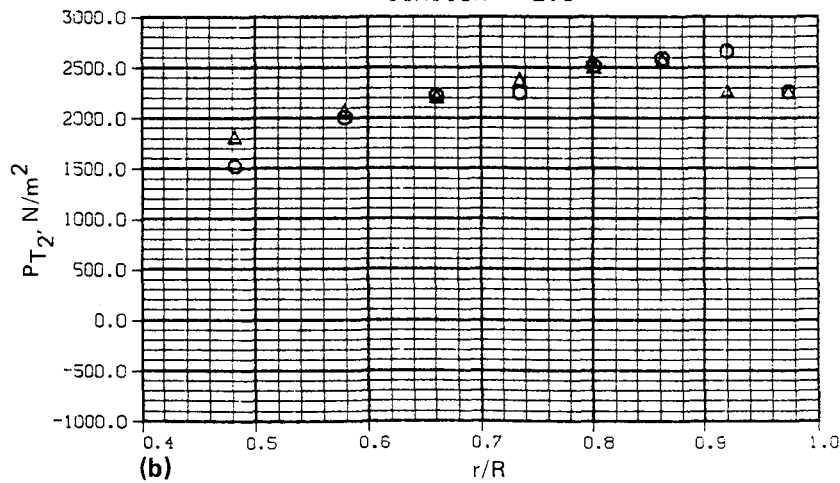
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 42. MASS FLOW: 109.54 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

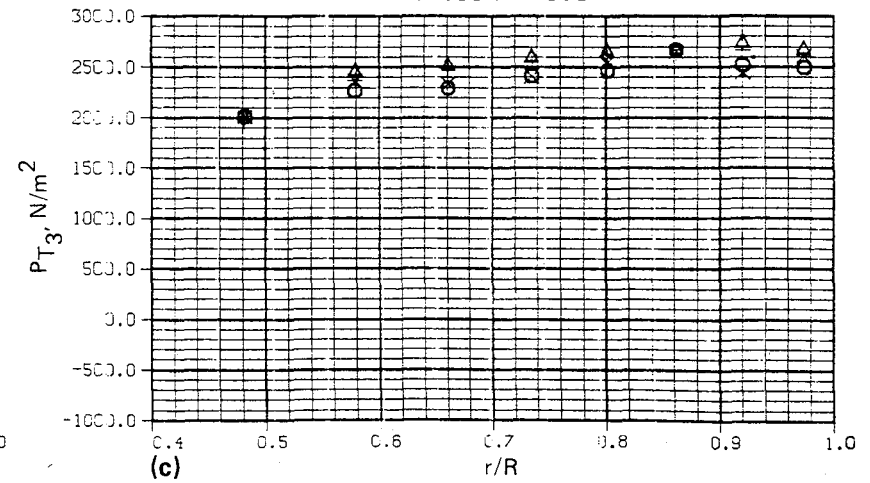


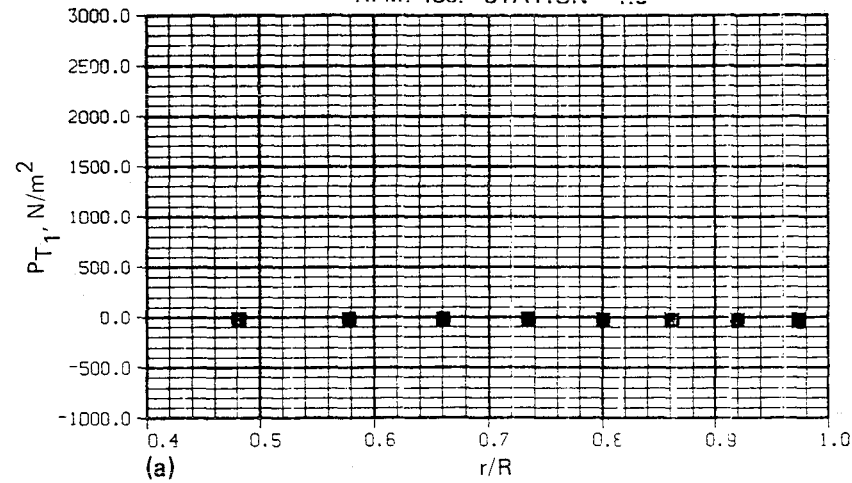
Figure D32.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

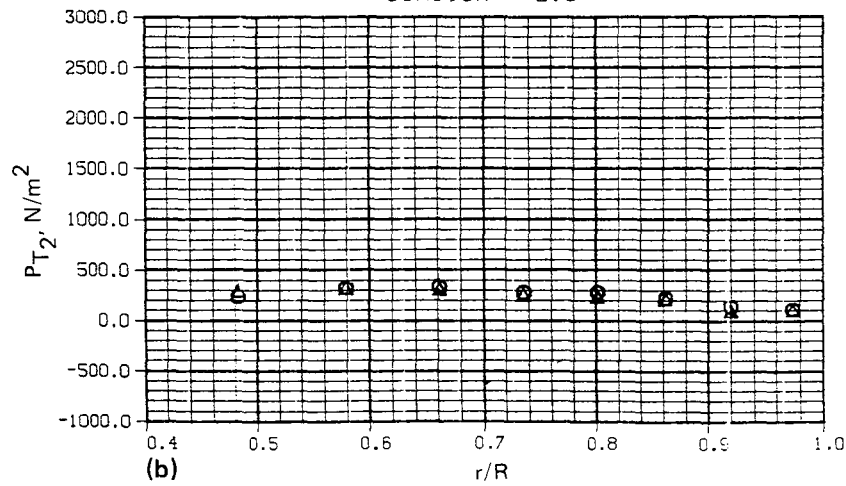
BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 43. MASS FLOW: 34.12 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

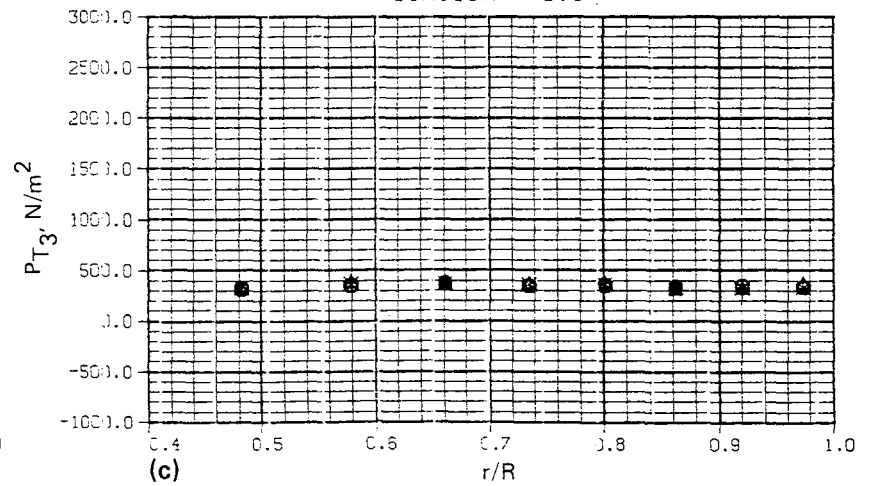


Figure D33.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 44. MASS FLOW: 55.59 slugs/sec

RPM: 720. STATION = 1.0

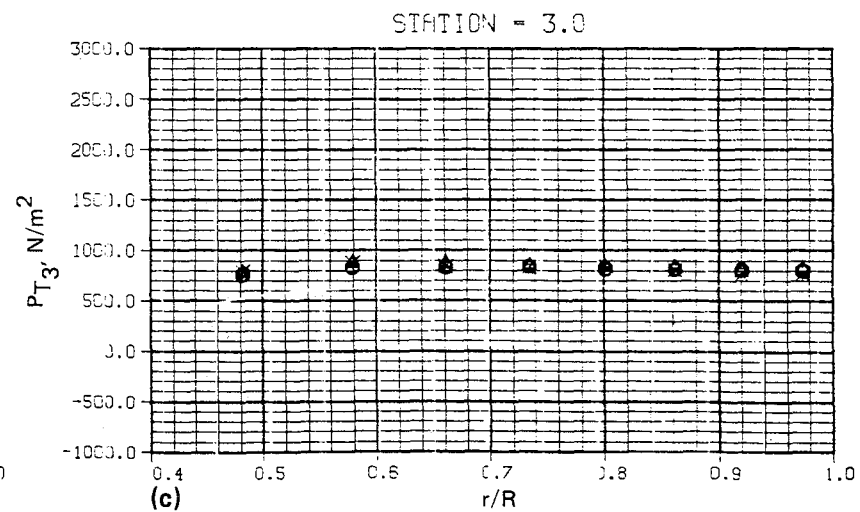
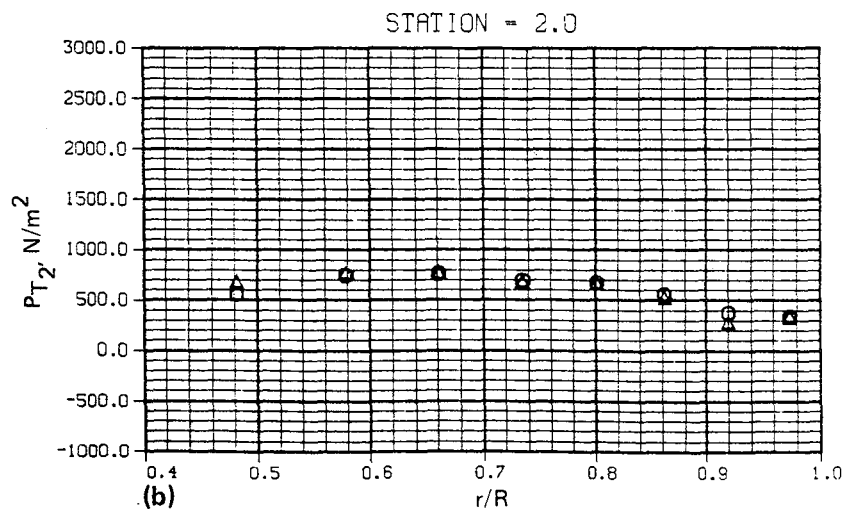
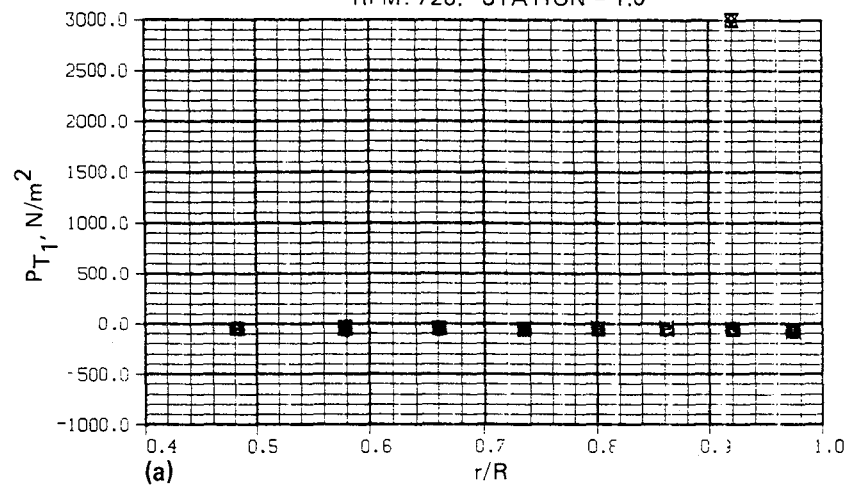
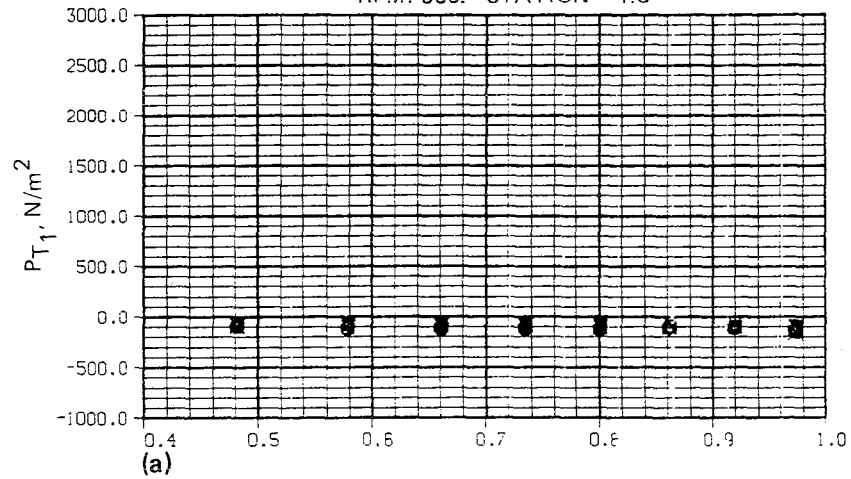
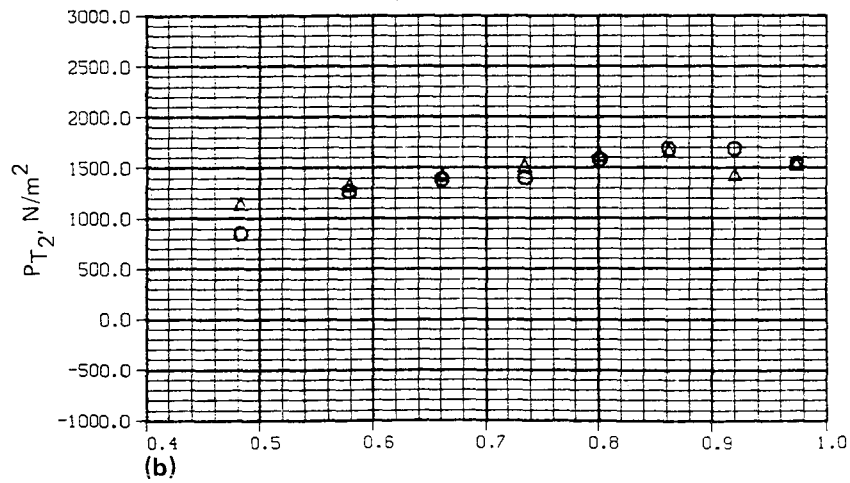


Figure D34.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 36.0
 RUN NO: 45. MASS FLOW: 74.94 slugs/sec
 RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

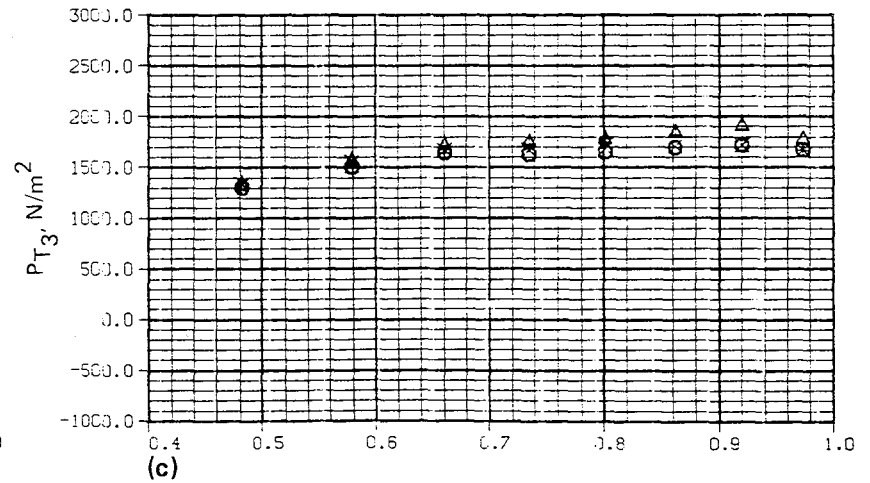


Figure D35.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 36.0

RUN NO: 46. MASS FLOW: 96.03 slugs/sec

RPM: 1200. STATION = 1.0

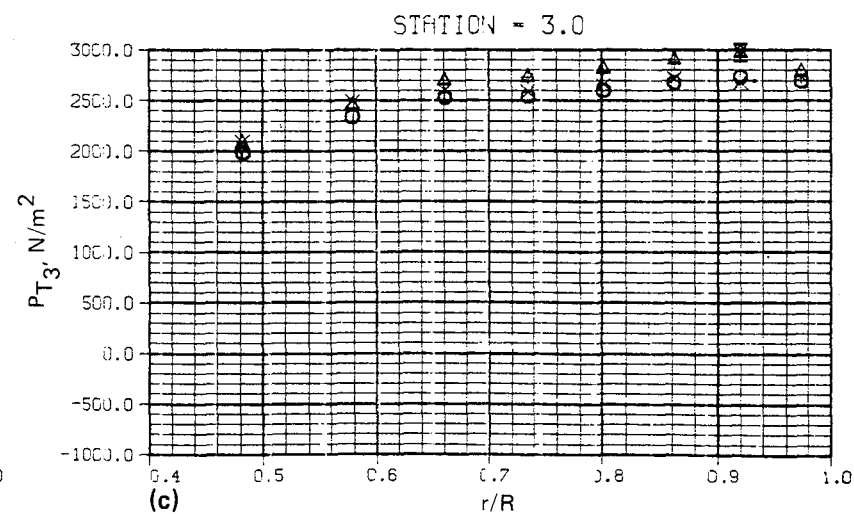
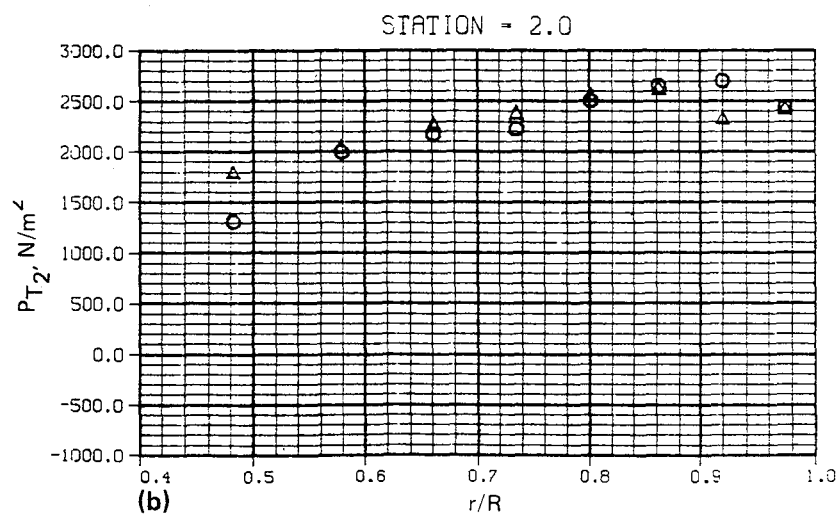
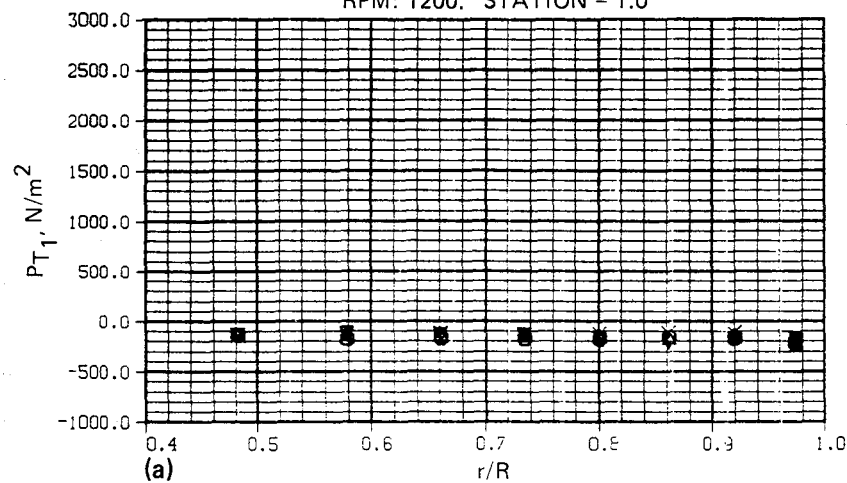


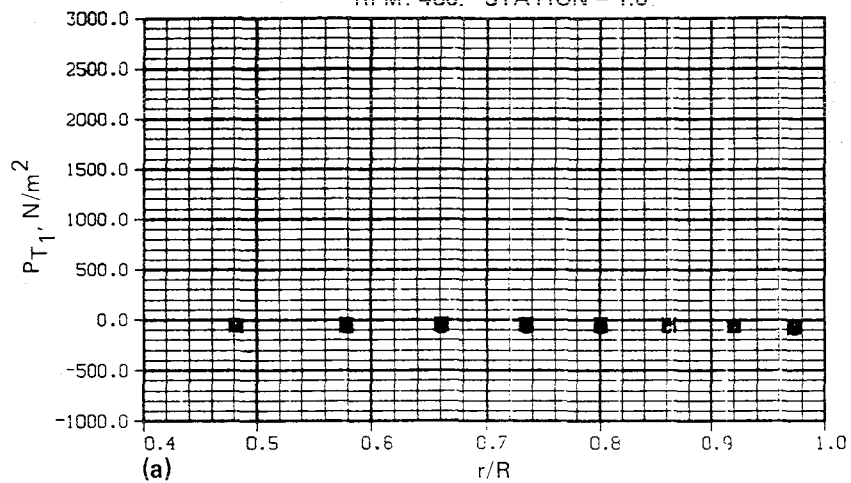
Figure D36.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

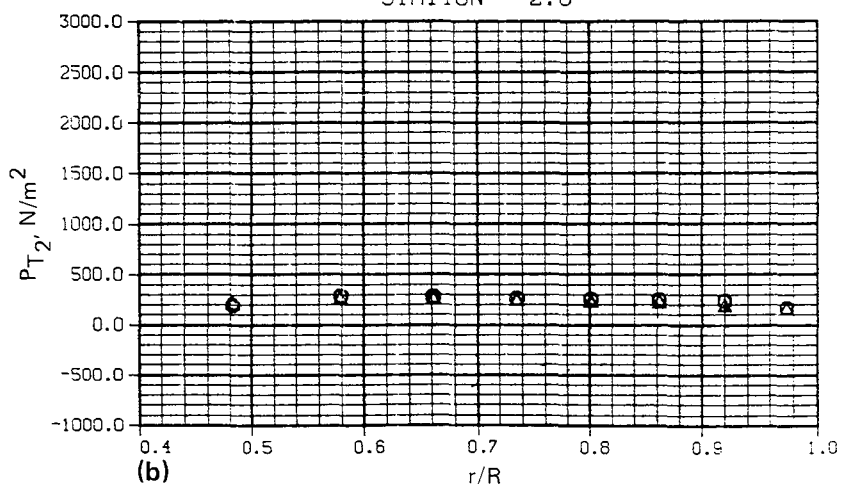
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 54. MASS FLOW: 55.13 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

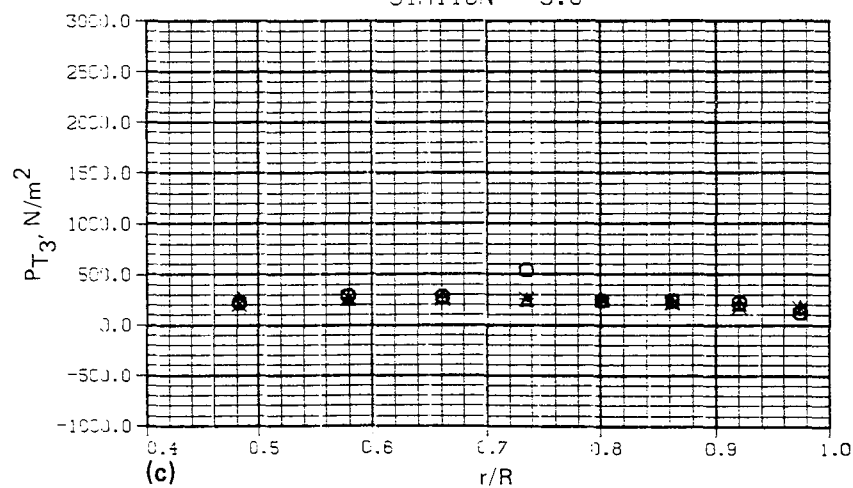


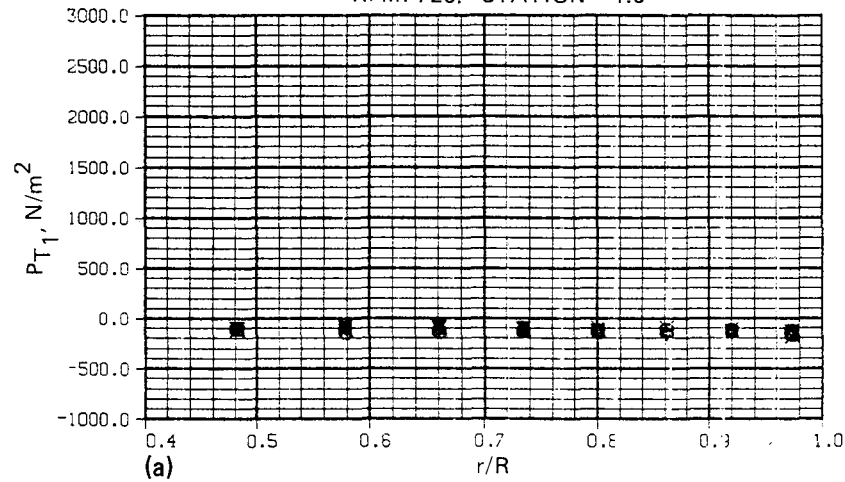
Figure D37.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

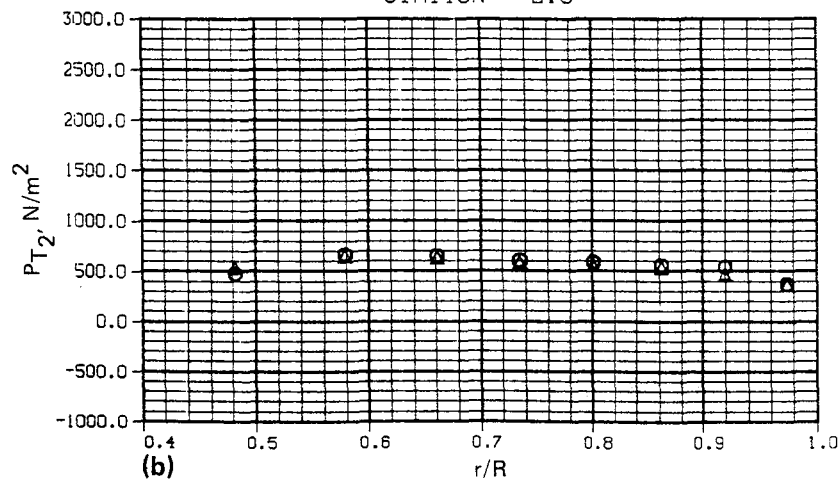
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 55. MASS FLOW: 84.02 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

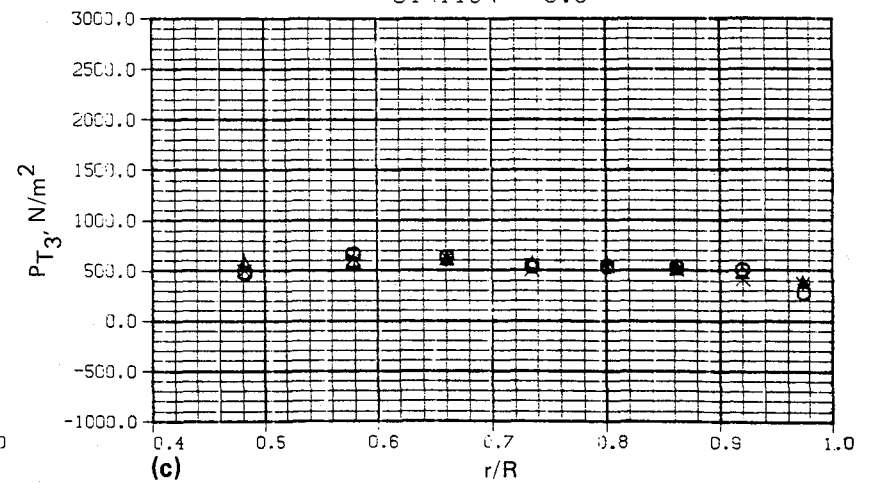


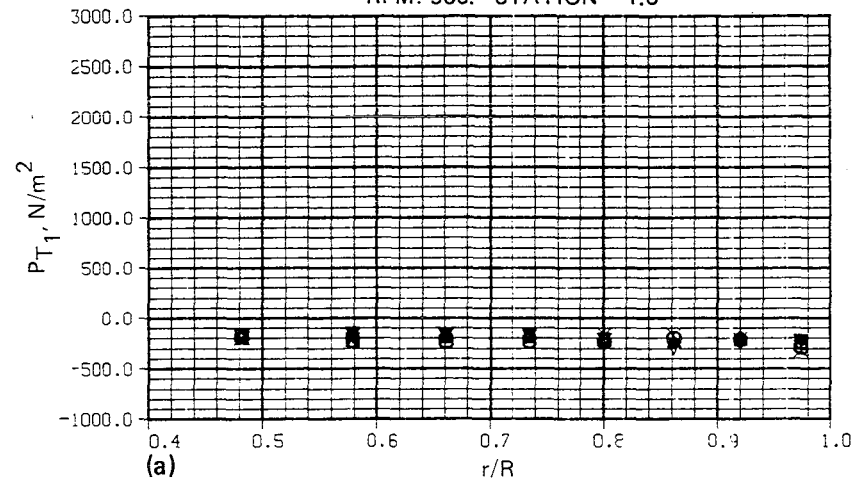
Figure D38.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

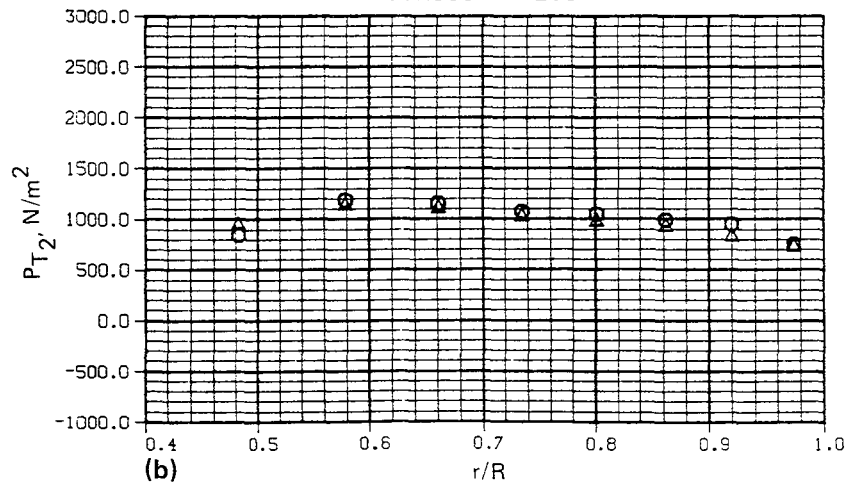
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 56. MASS FLOW: 112.25 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

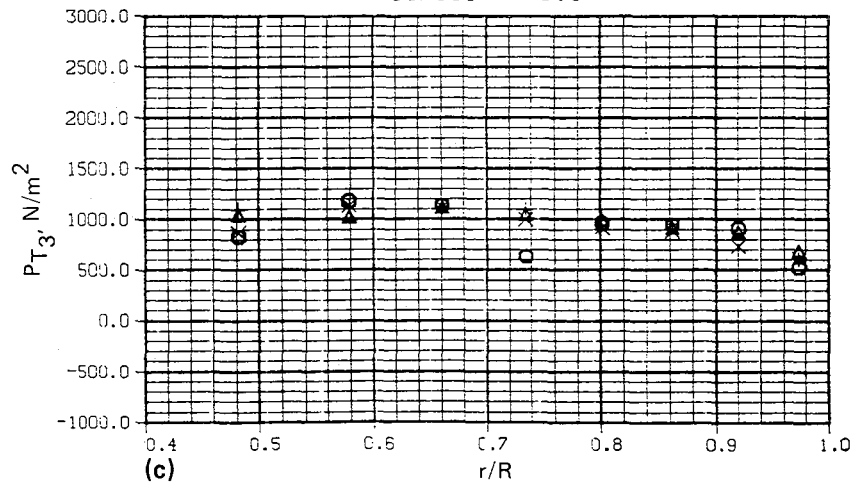


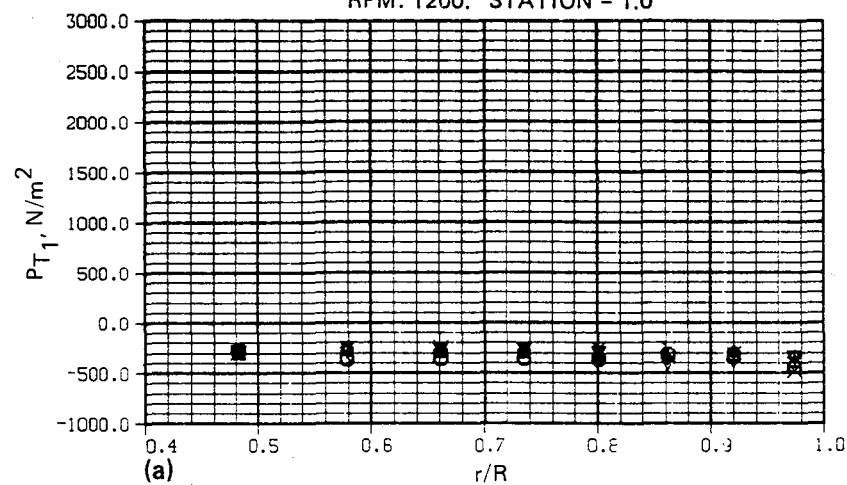
Figure D39.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

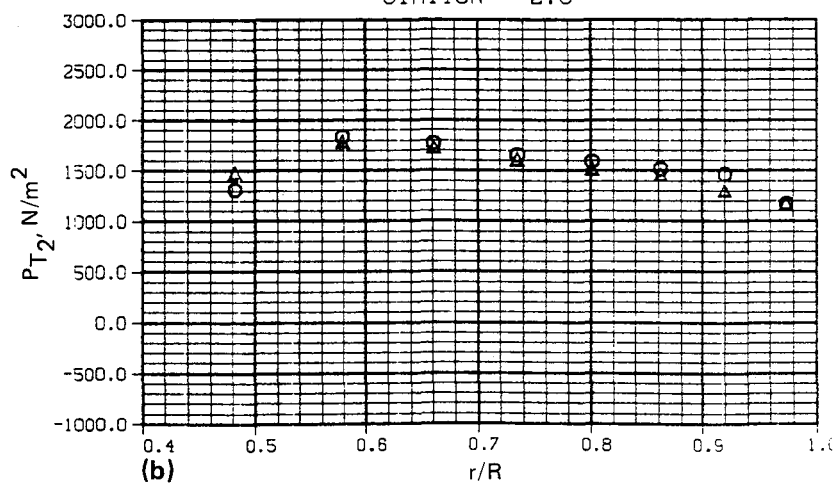
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 57. MASS FLOW: 140.83 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

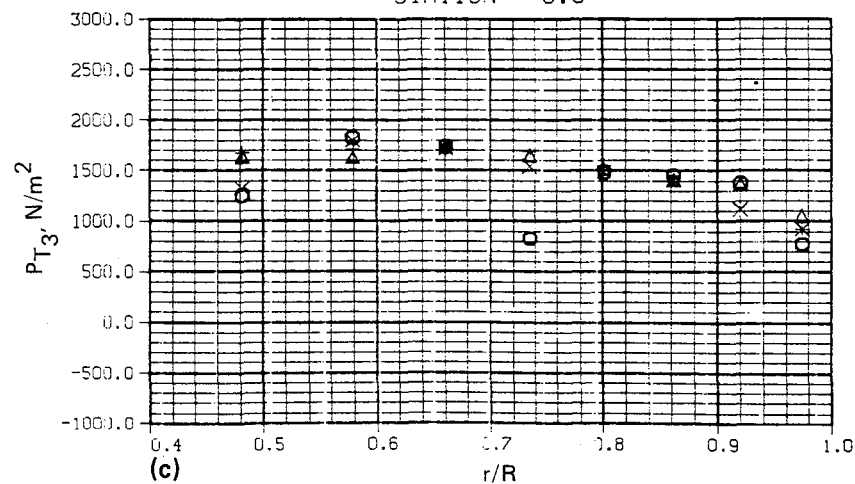


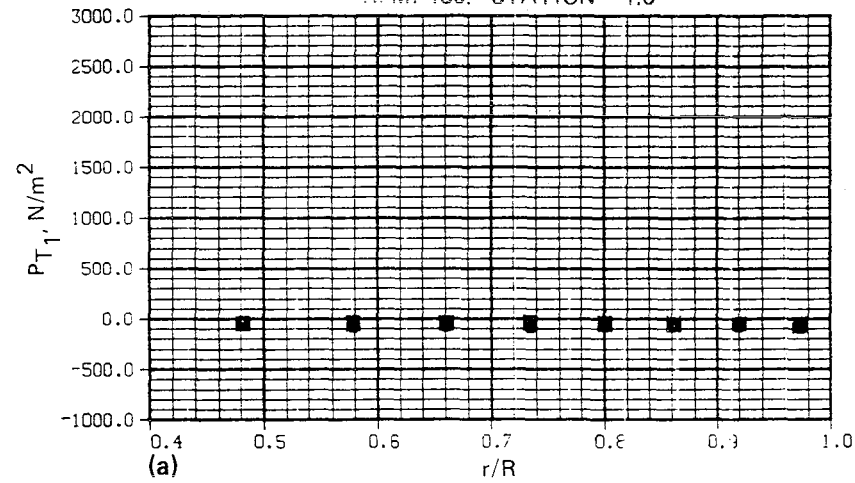
Figure D40.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

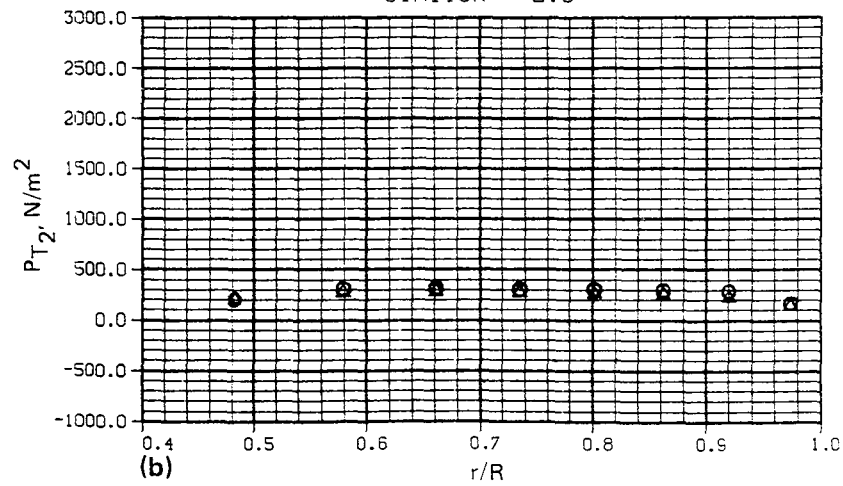
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 58. MASS FLOW: 52.72 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

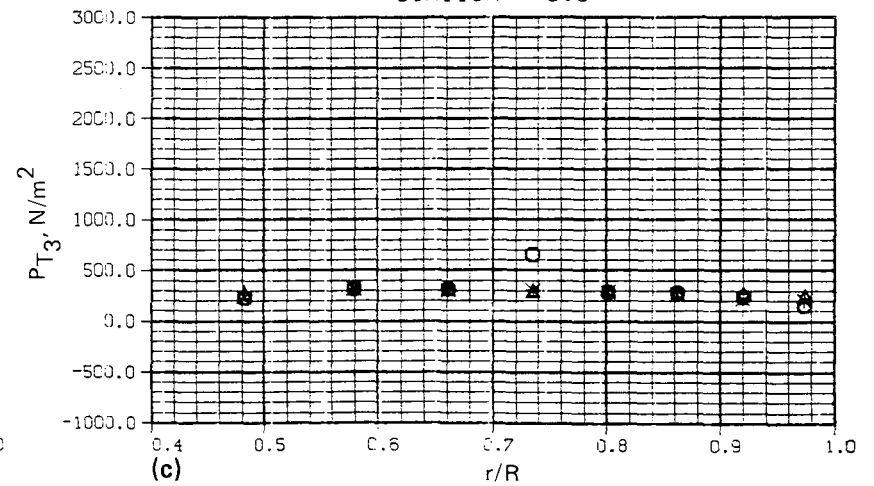


Figure D41.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 59. MASS FLOW: 79.55 slugs/sec

RPM: 720. STATION = 1.0

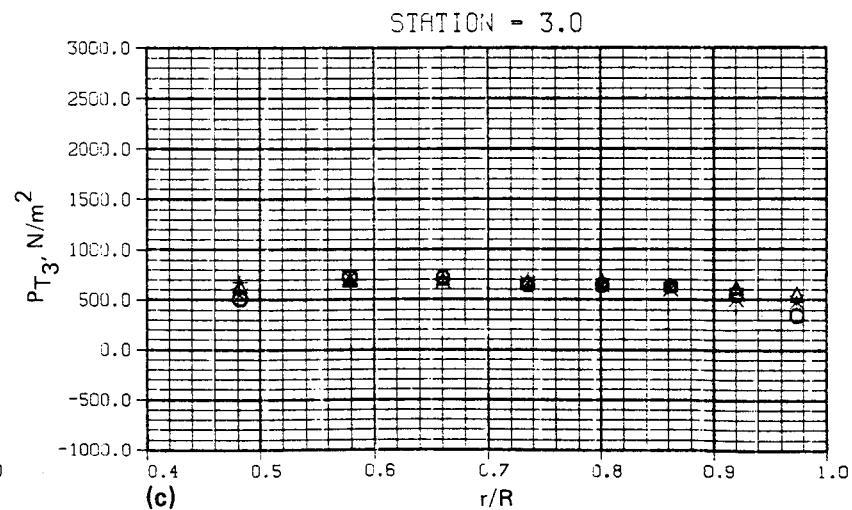
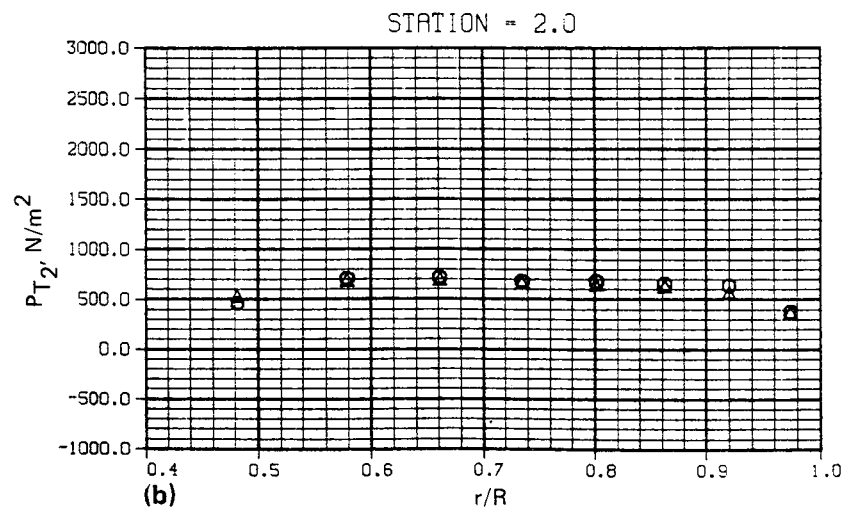
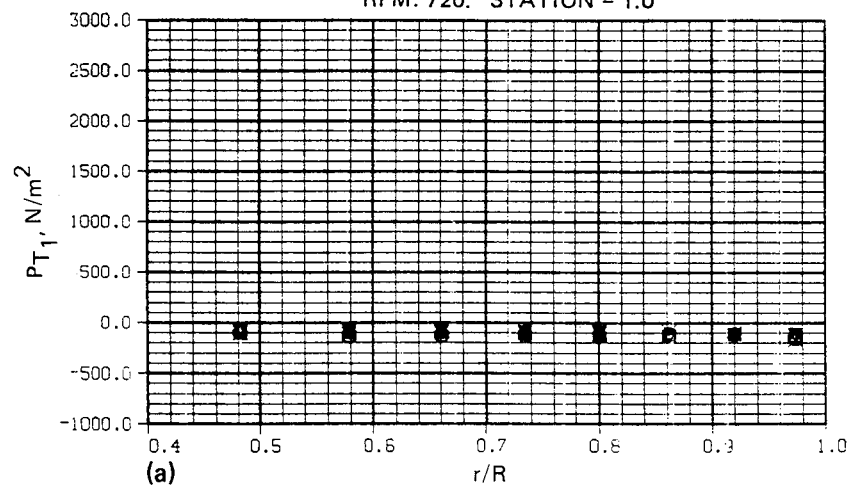


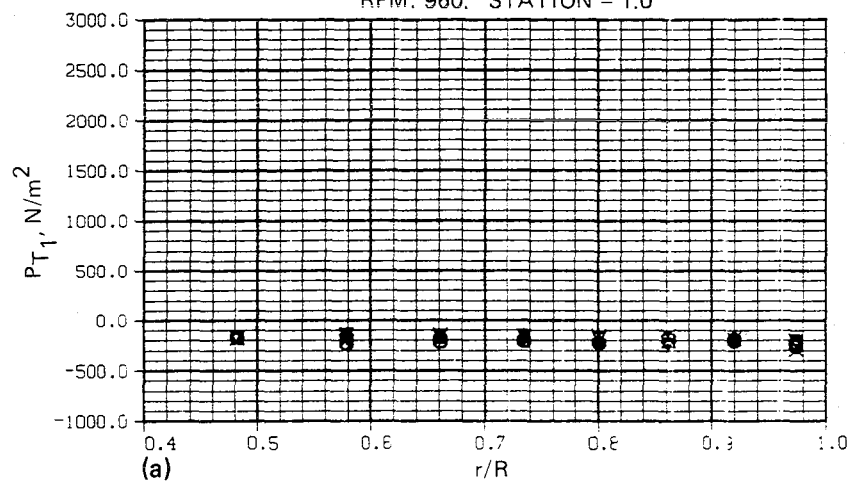
Figure D42.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

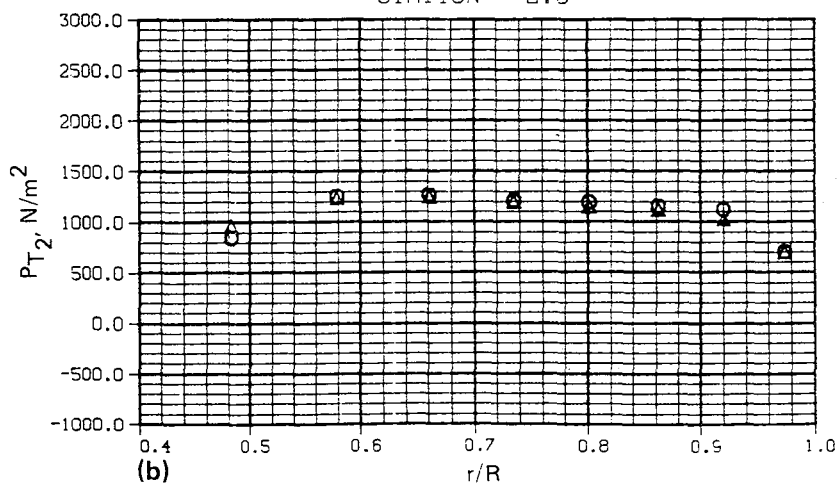
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 60. MASS FLOW: 106.29 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

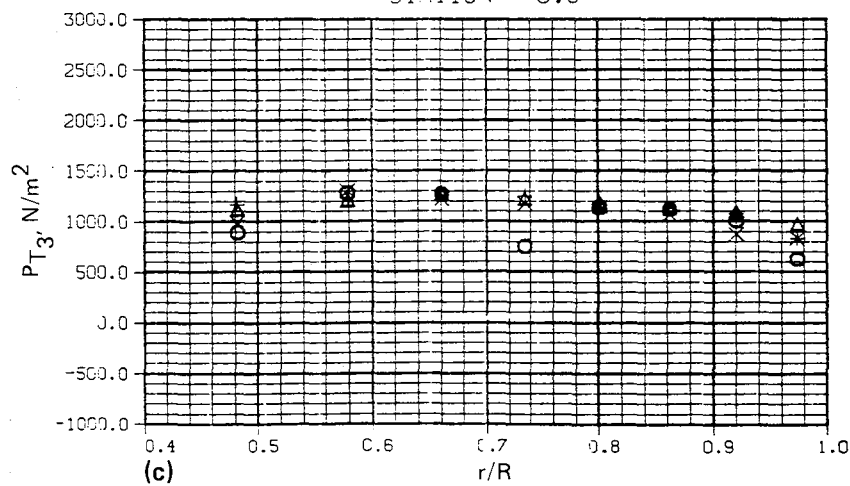


Figure D43.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 61. MASS FLOW: 134.23 slugs/sec

RPM: 1200. STATION = 1.0

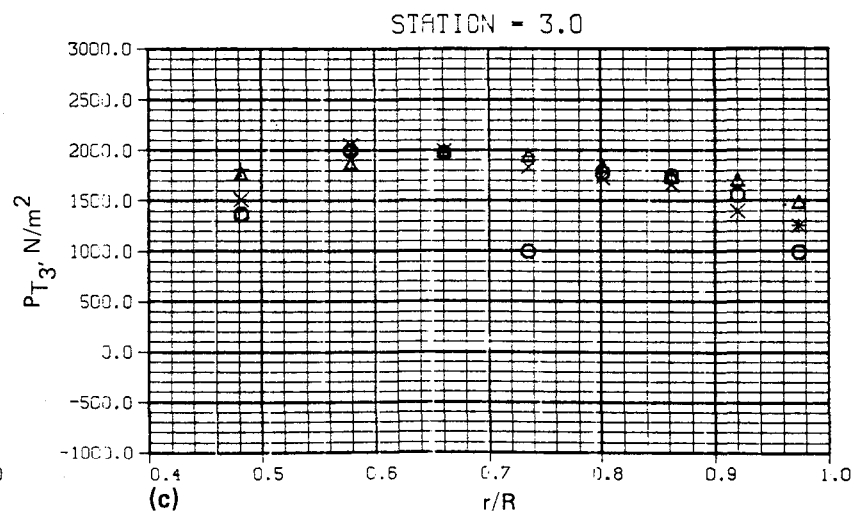
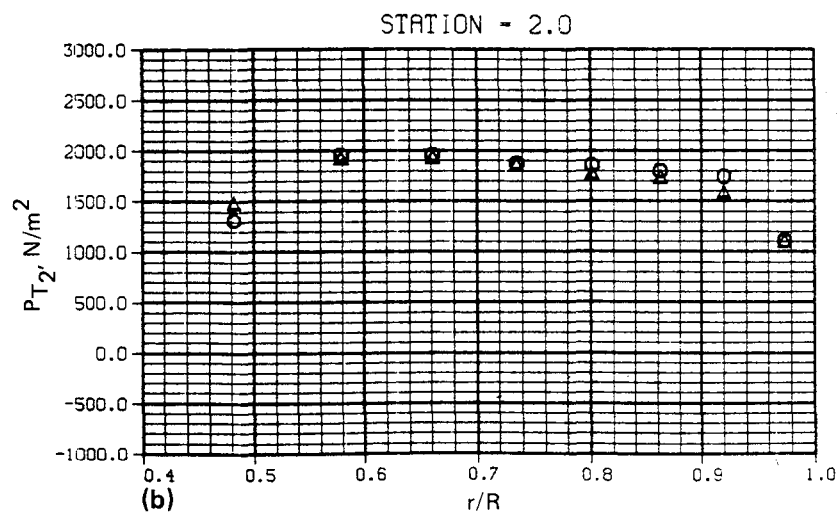
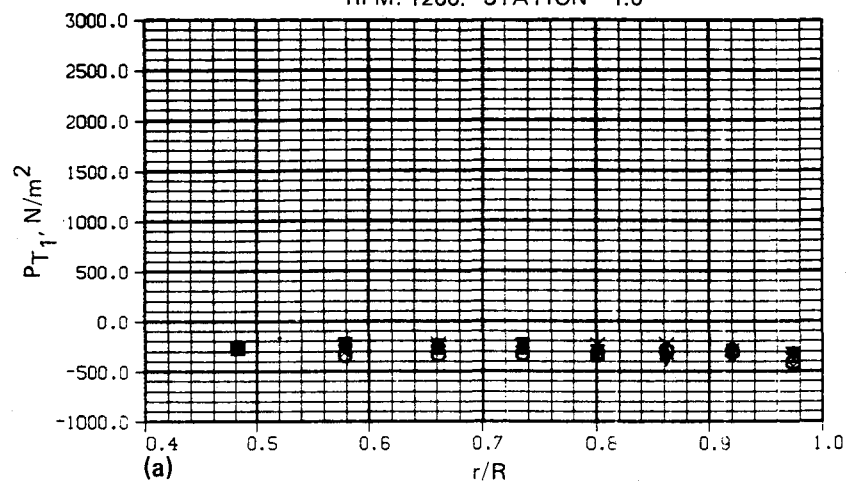


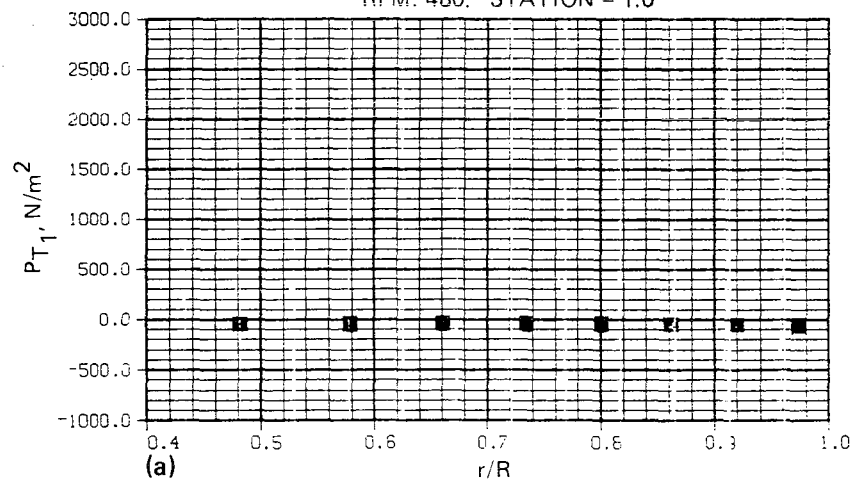
Figure D44.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

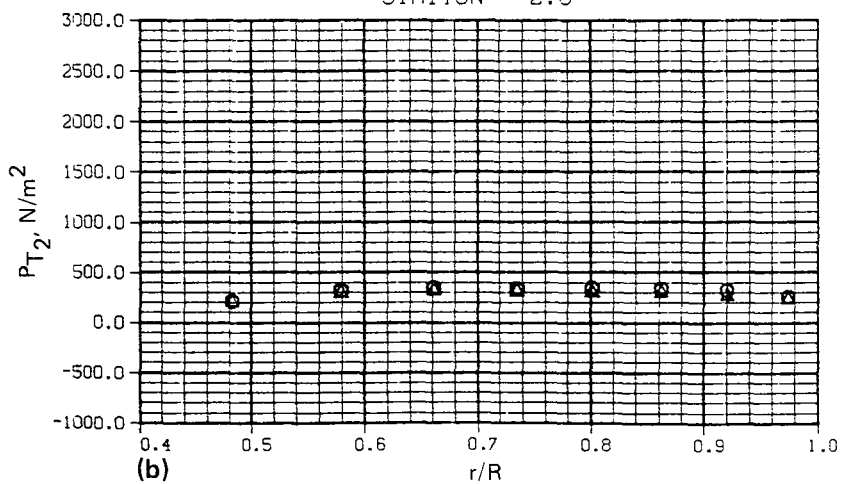
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 62. MASS FLOW: 49.88 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

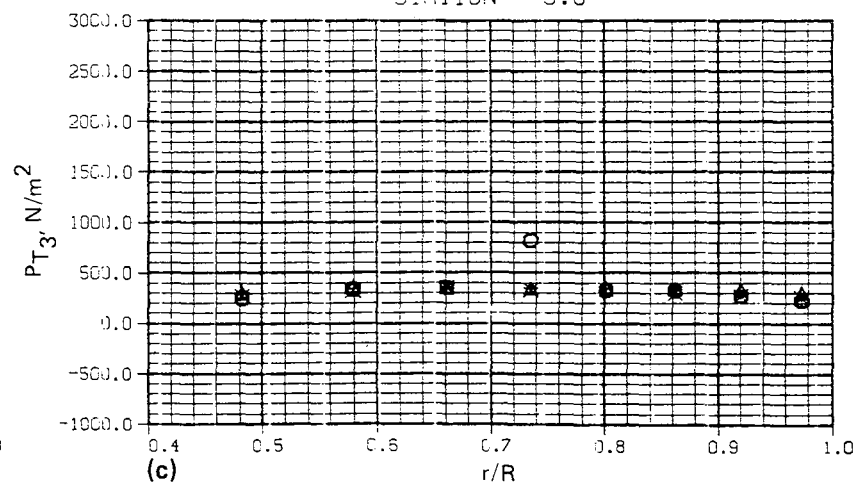


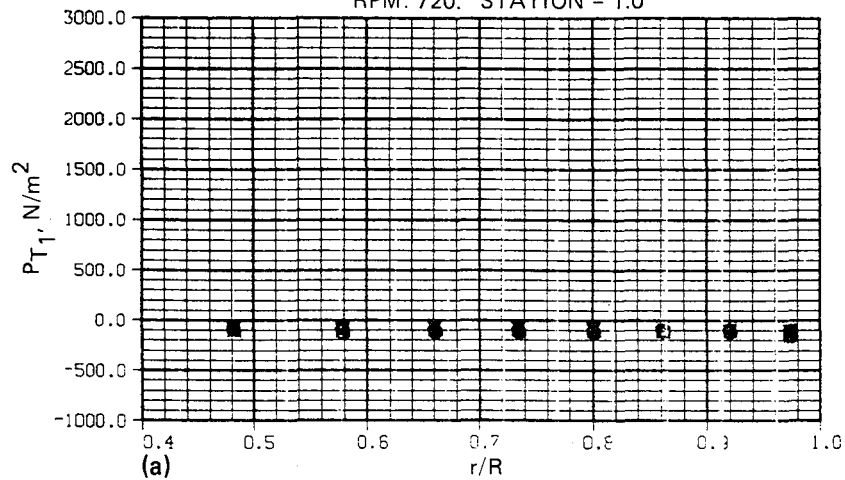
Figure D45.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

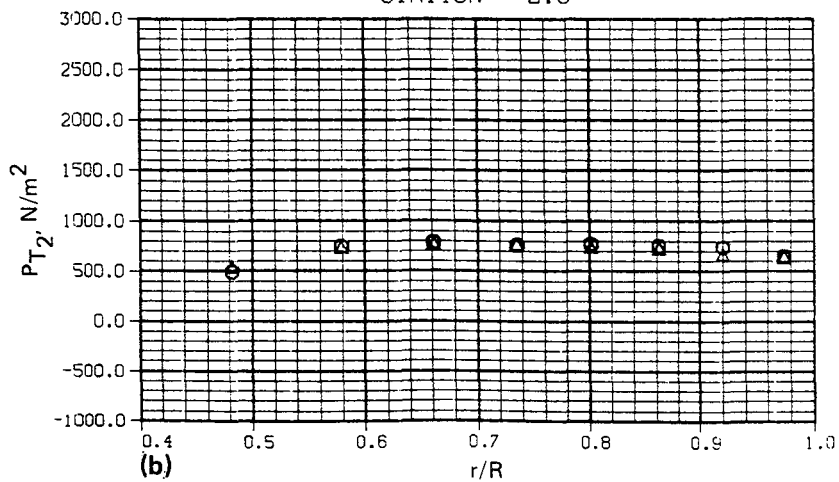
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 63. MASS FLOW: 75.38 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

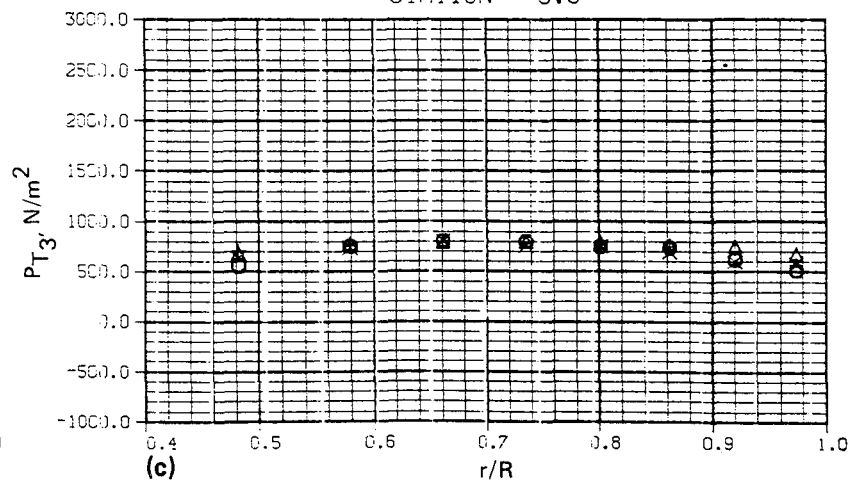


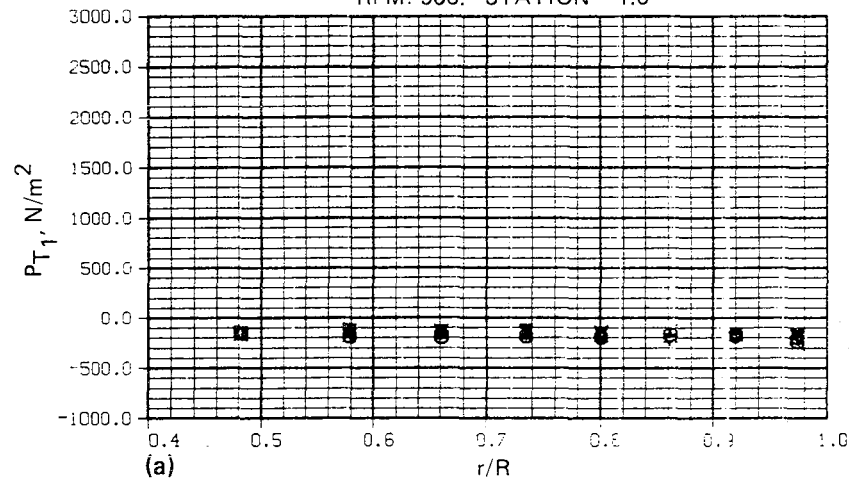
Figure D46.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

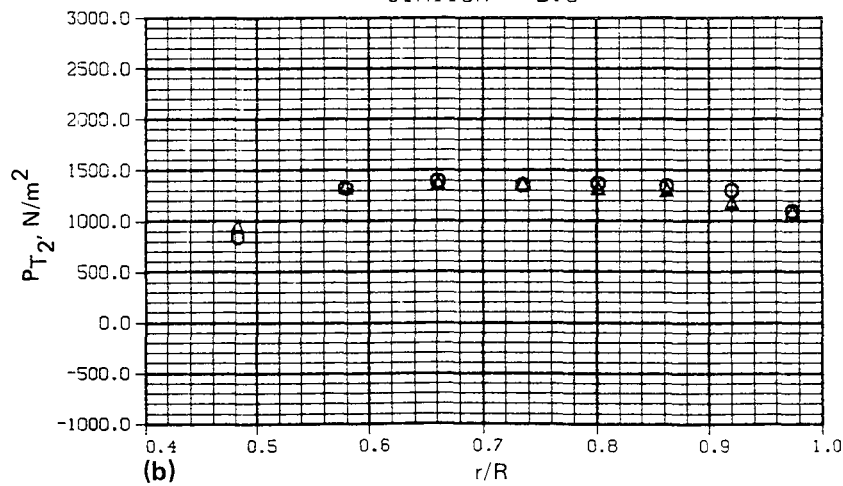
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 64. MASS FLOW: 101.21 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

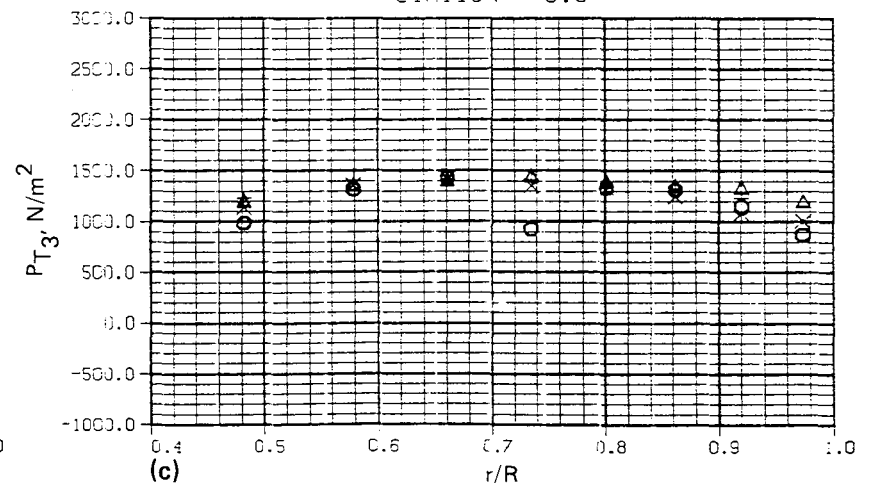


Figure D47.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES VS. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 34.0
 RUN NO: 65. MASS FLOW: 127.05 slugs/sec
 RPM: 1200. STATION = 1.0

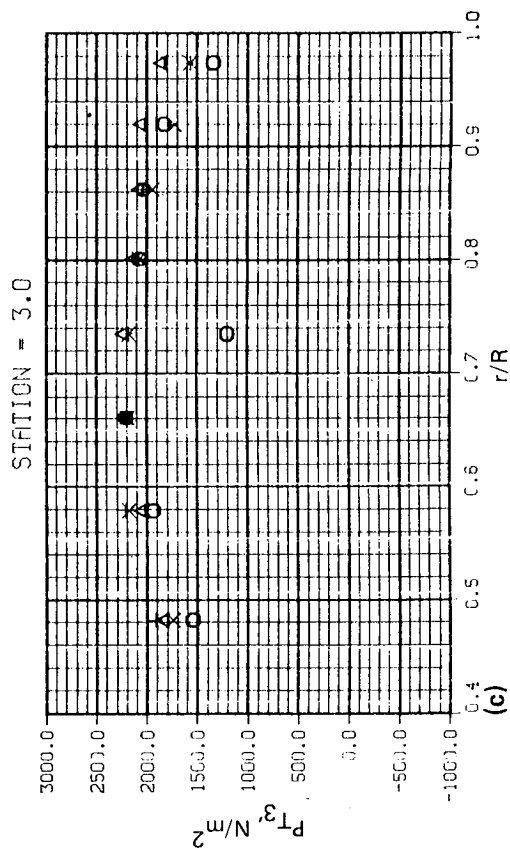
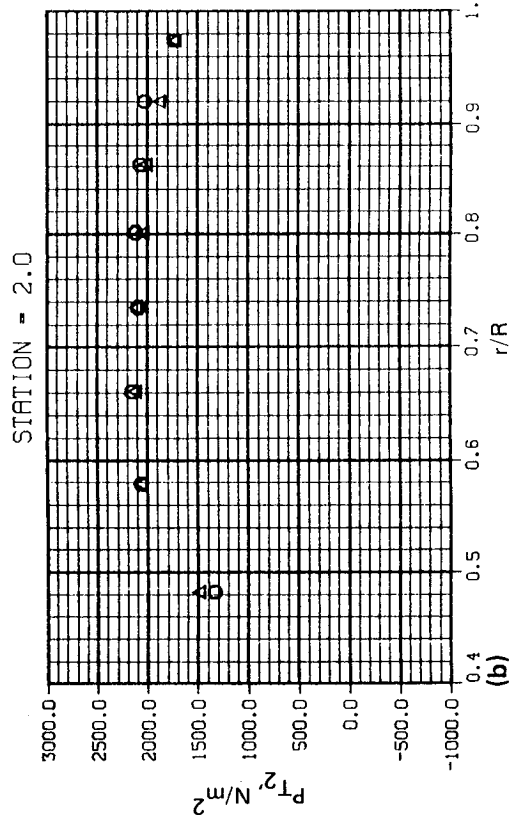
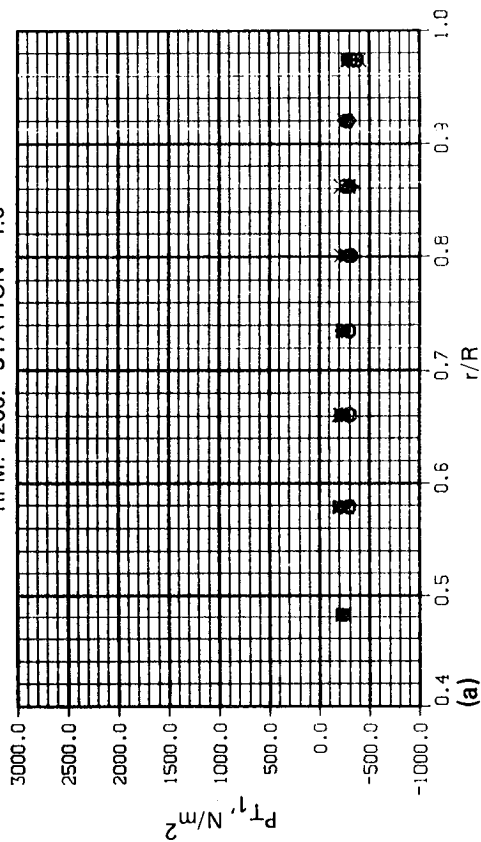


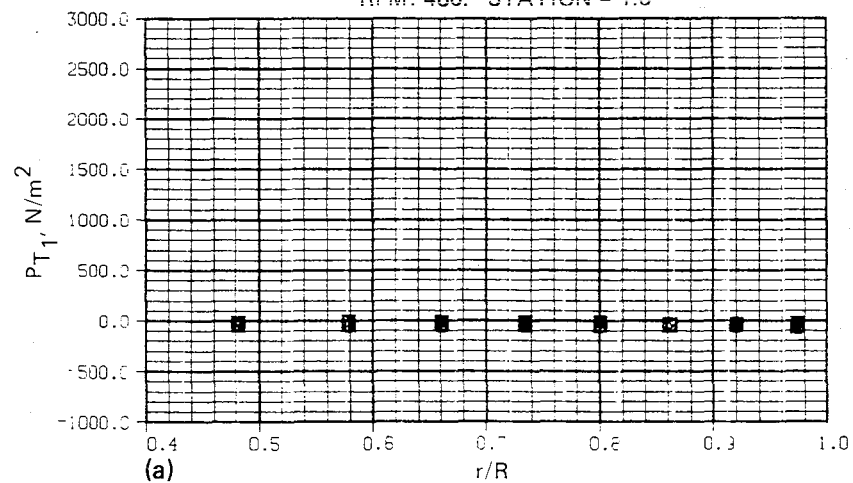
Figure D48.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

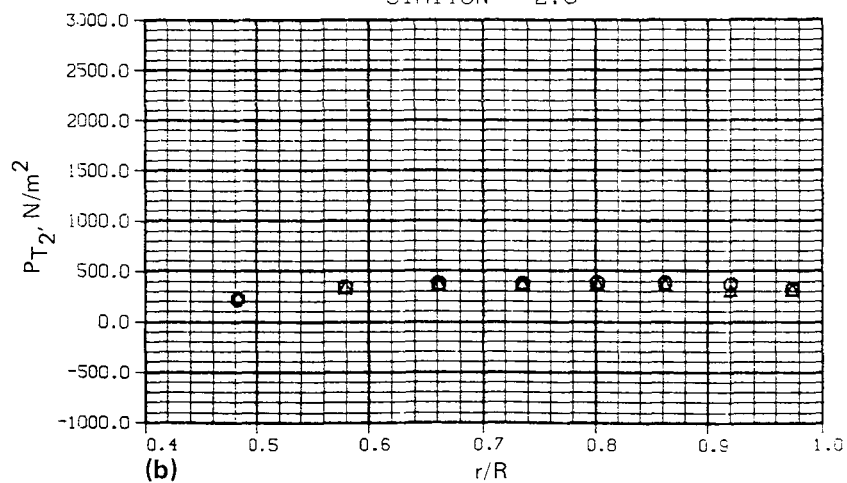
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 66. MASS FLOW: 47.97 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

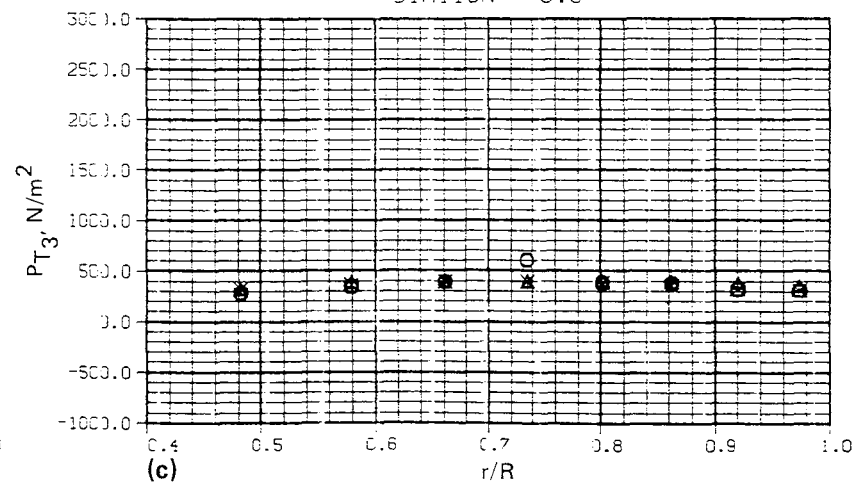


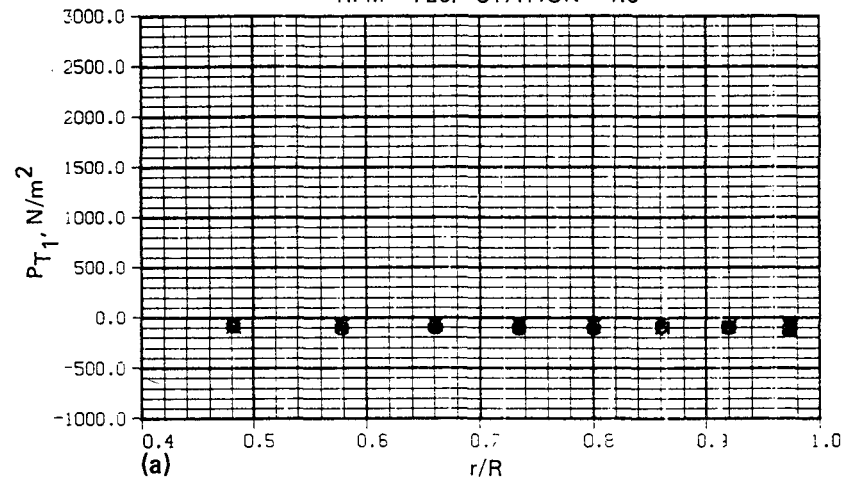
Figure D49.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

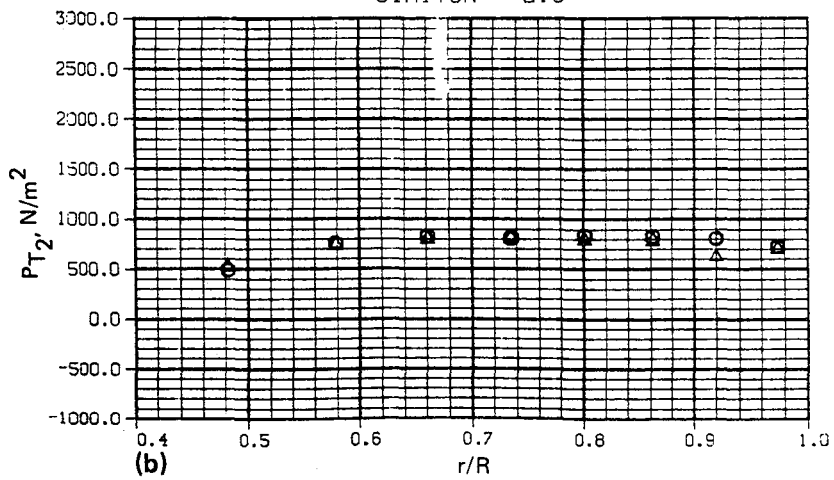
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 67. MASS FLOW: 71.80 slugs/sec

RPM = 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

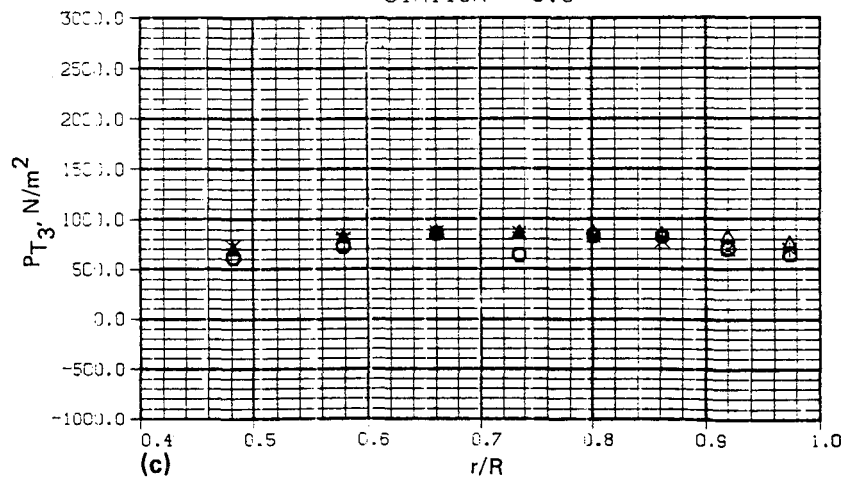


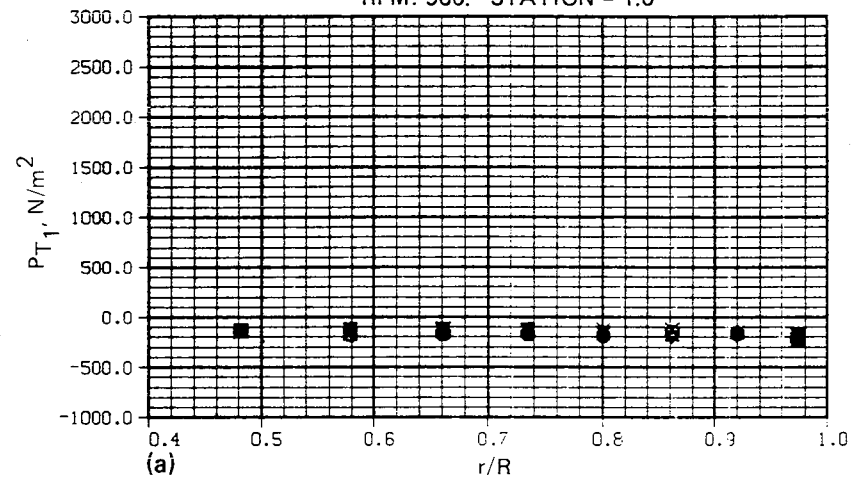
Figure D50.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

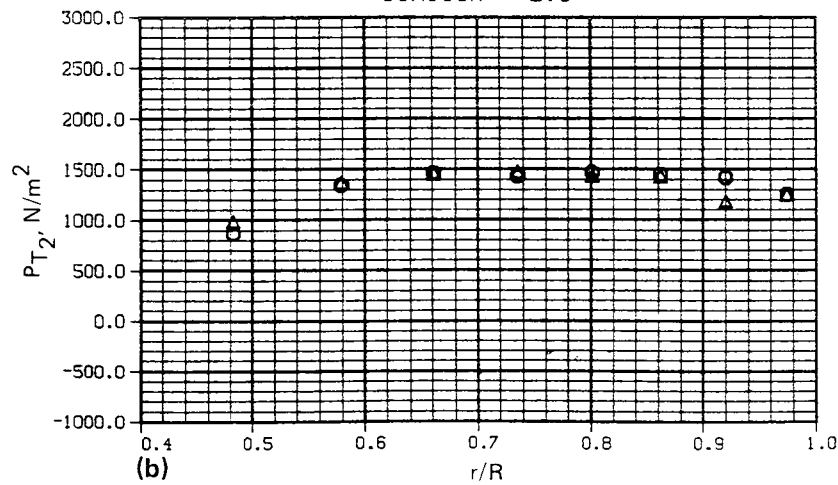
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 68. MASS FLOW: 96.74 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

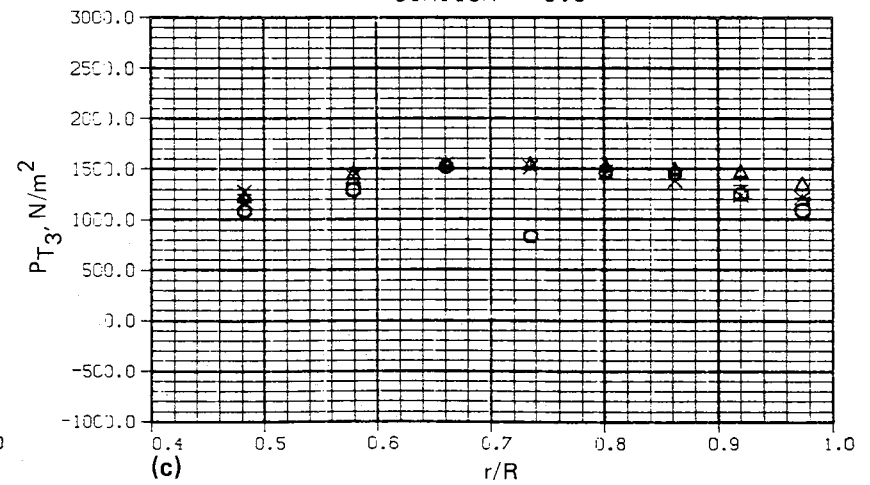


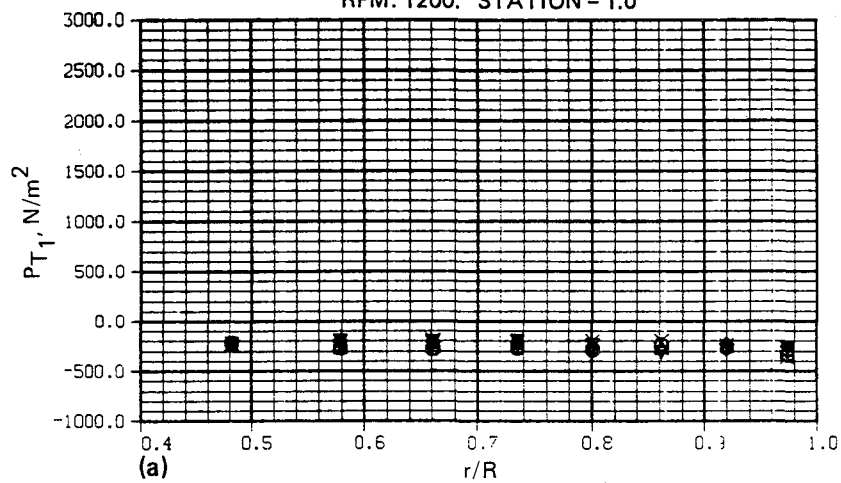
Figure D51.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

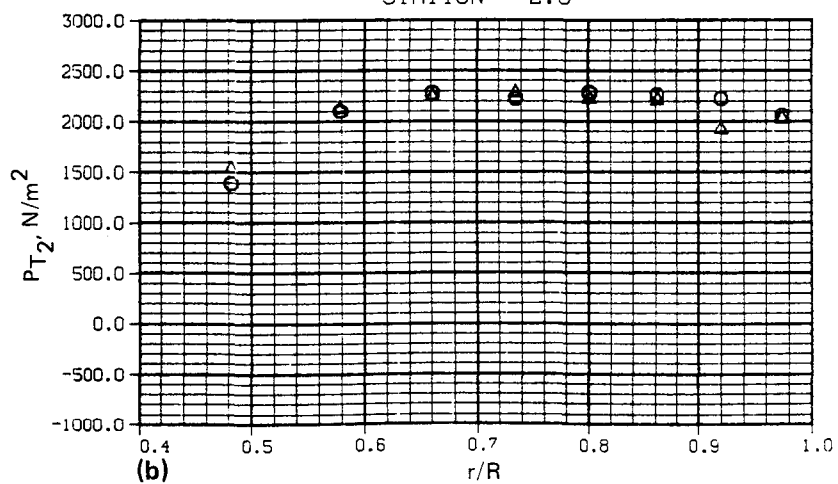
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 69. MASS FLOW: 122.57 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

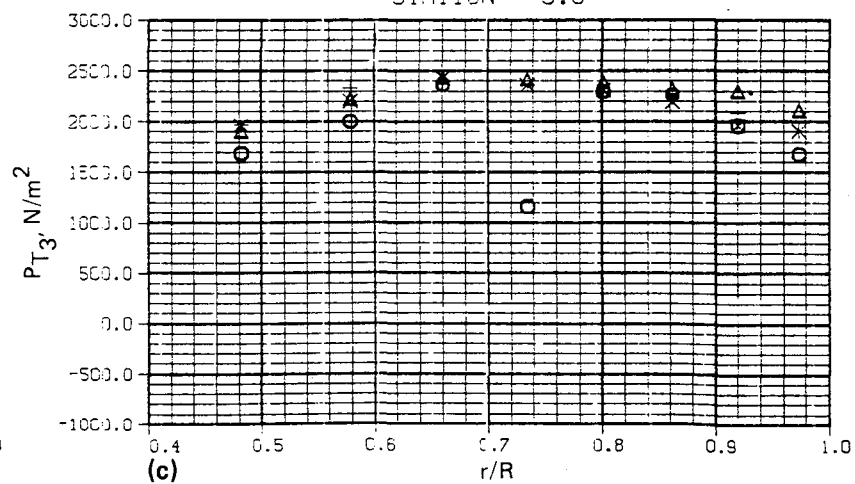


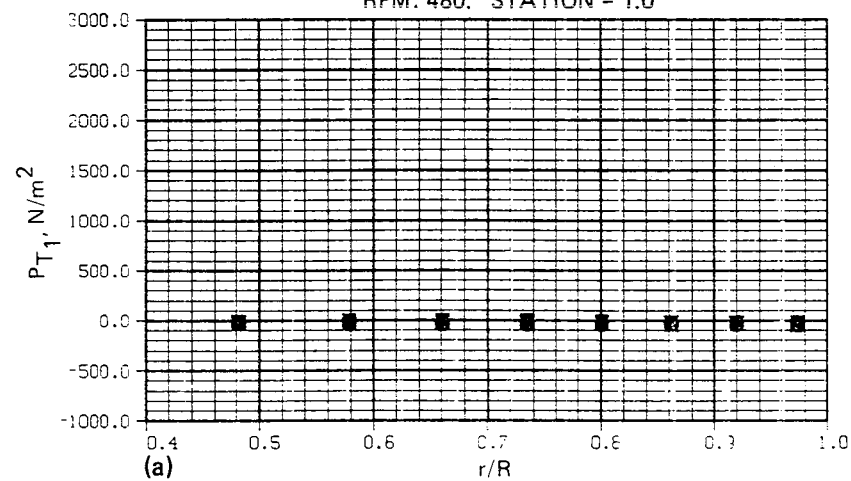
Figure D52.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

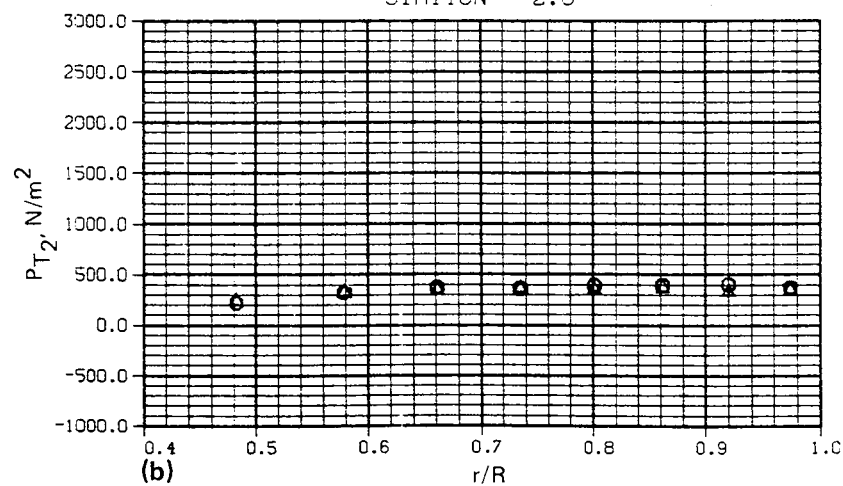
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 70. MASS FLOW: 41.76 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

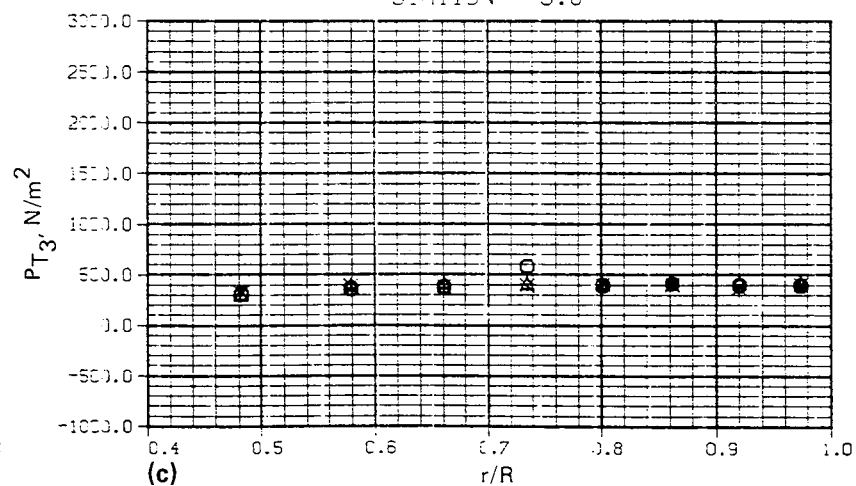


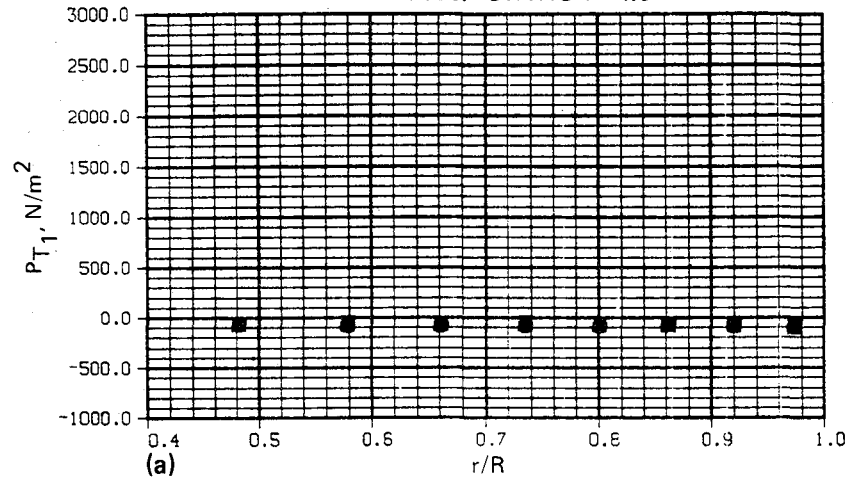
Figure D53.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

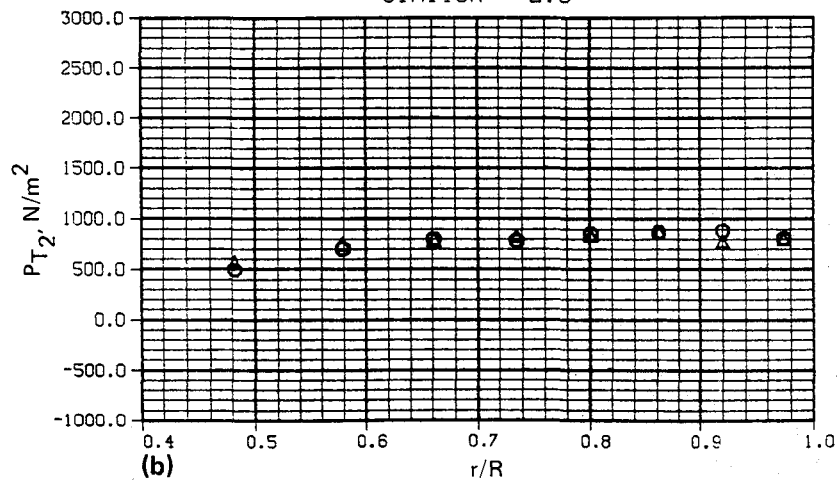
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 71. MASS FLOW: 62.28 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

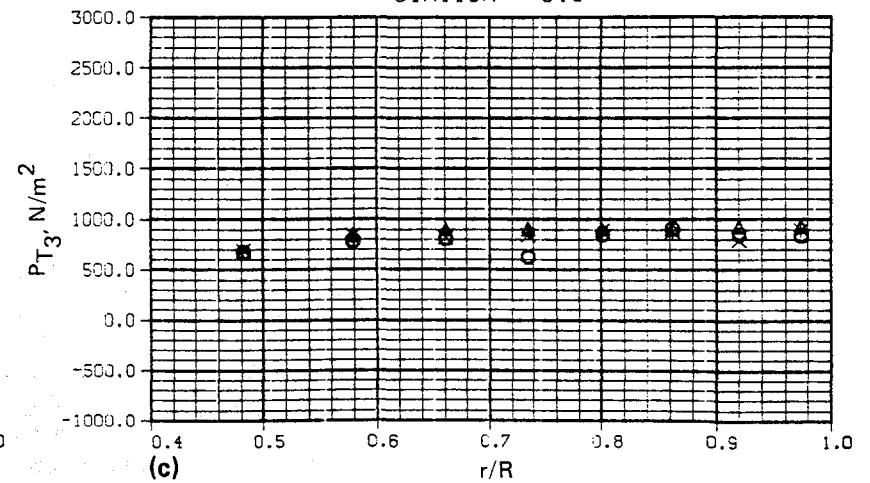
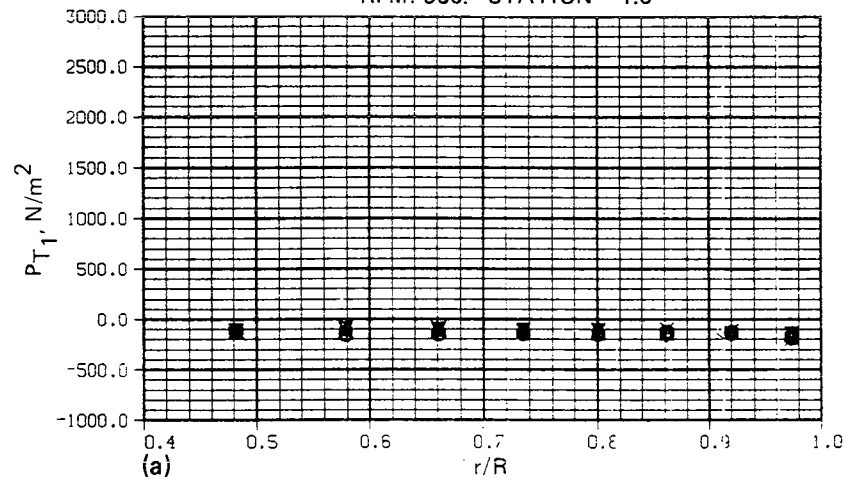
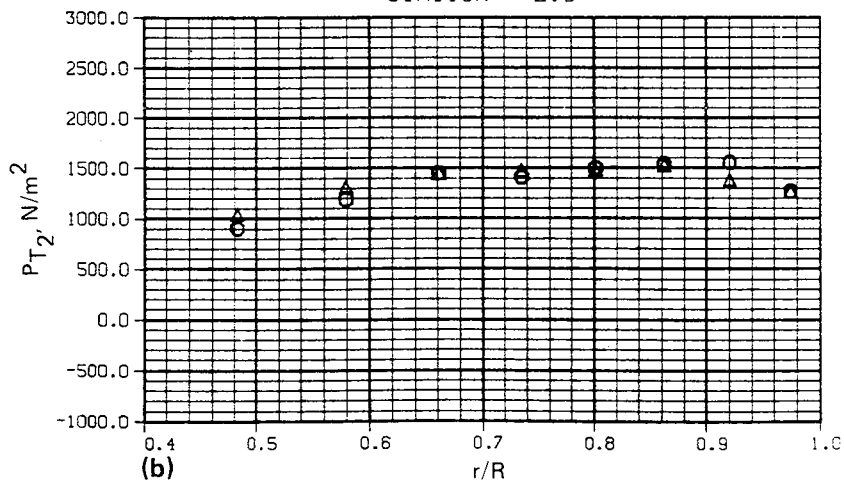


Figure D54.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 34.0
 RUN NO: 72. MASS FLOW: 87.09 slugs/sec
 RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

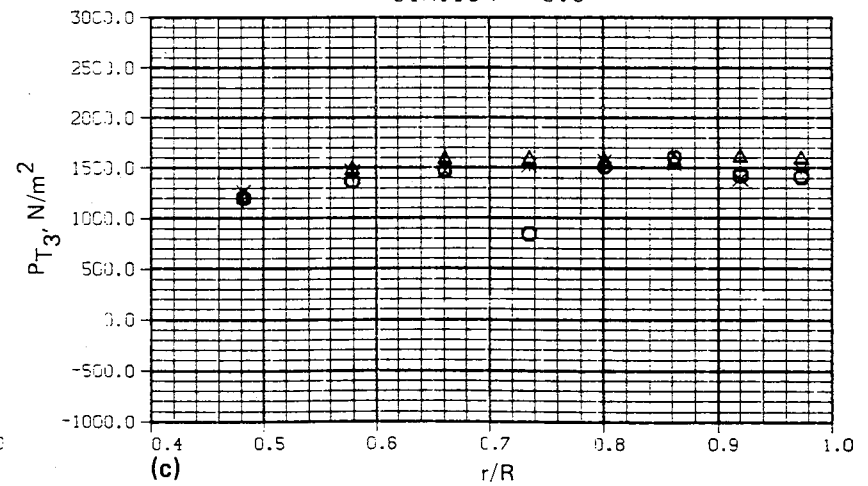


Figure D55.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 73. MASS FLOW: 120.85 slugs/sec

RPM: 1200. STATION = 1.0

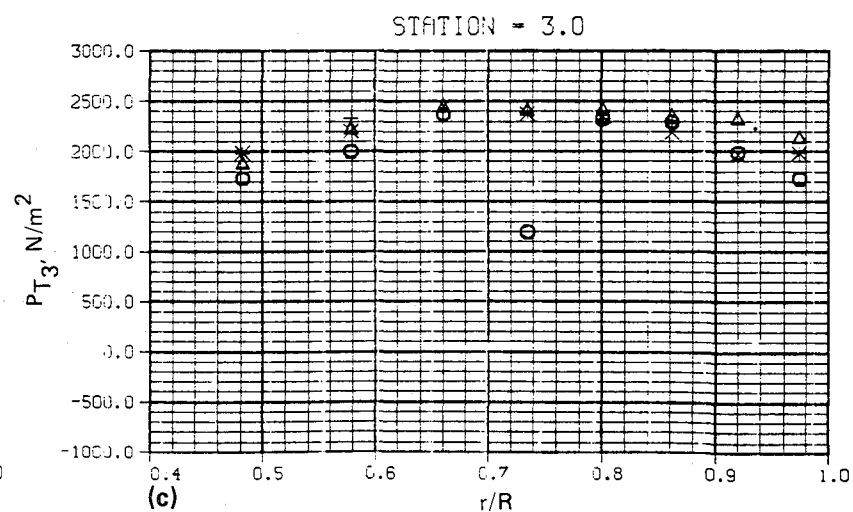
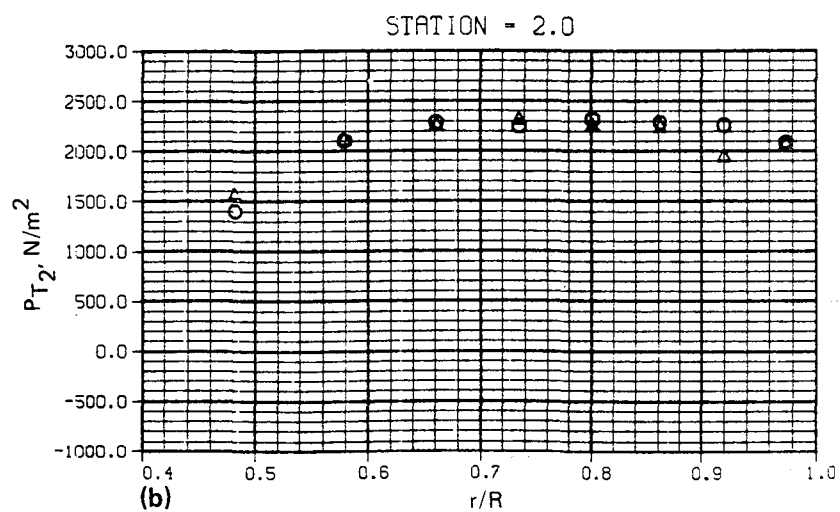
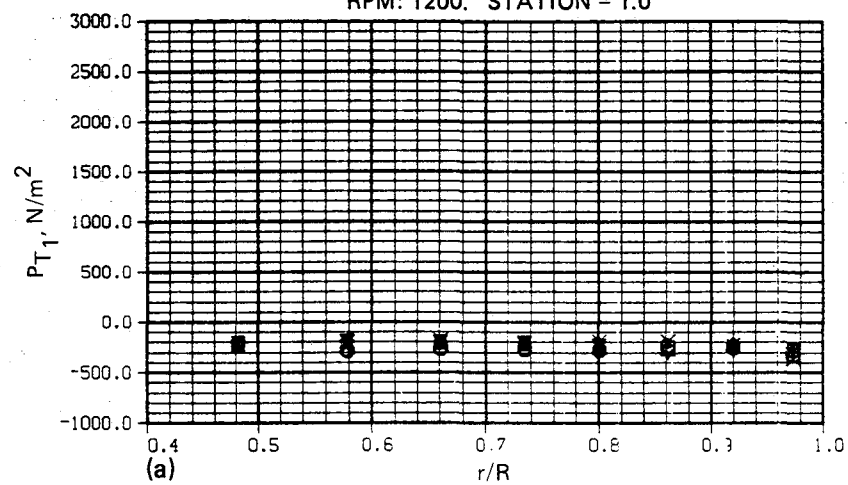


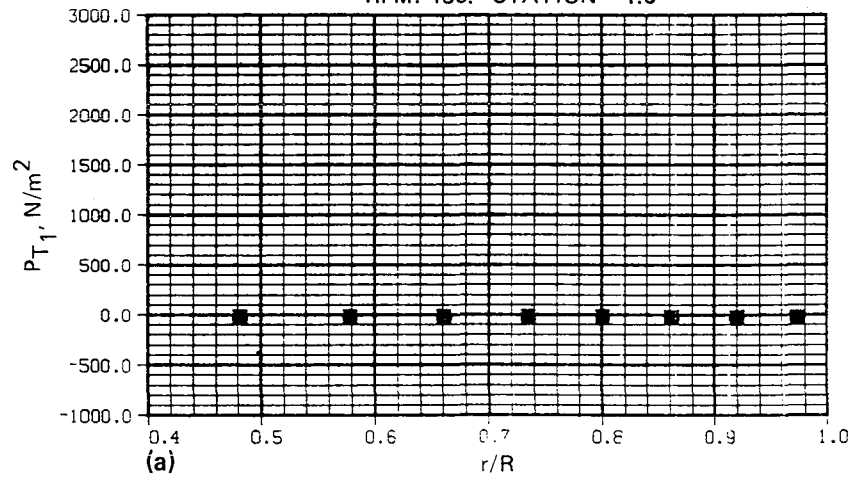
Figure D56.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

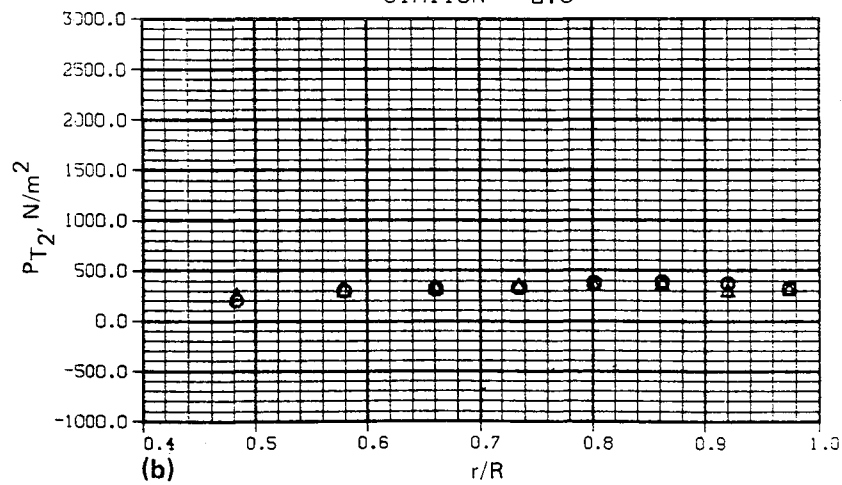
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 74. MASS FLOW: $\bar{34.13}$ slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

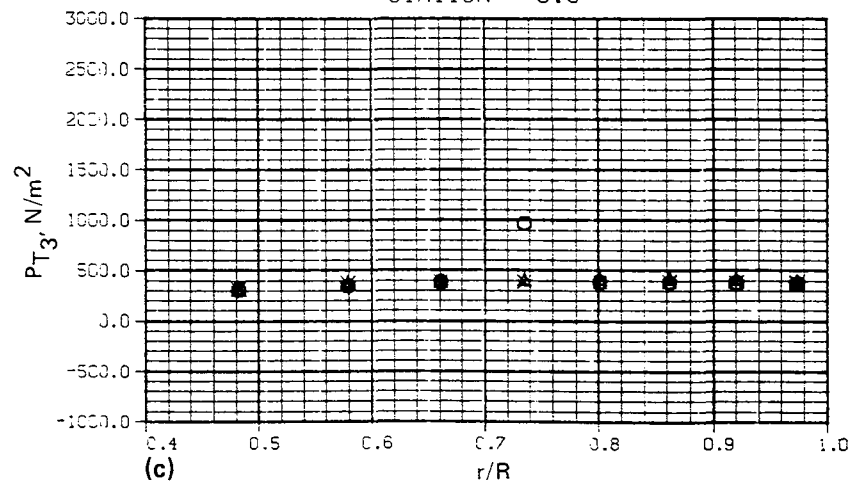


Figure D57.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 75. MASS FLOW: 52.82 slugs/sec

RPM: 720. STATION = 1.0

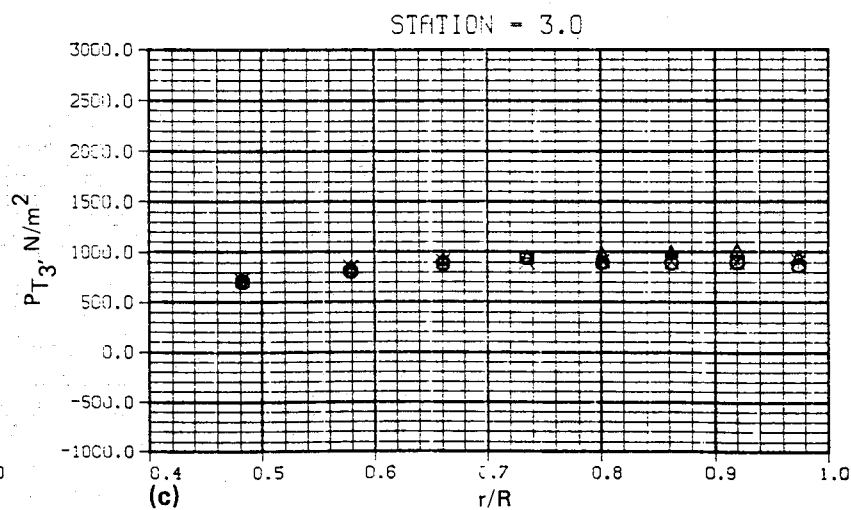
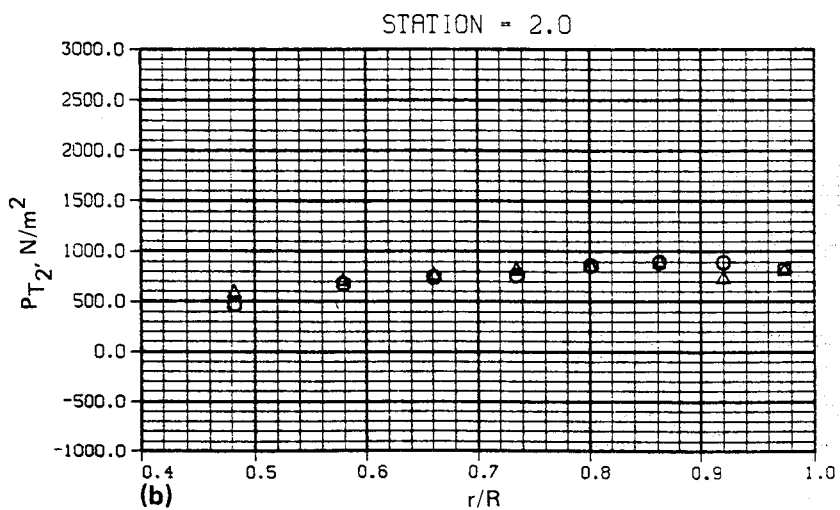
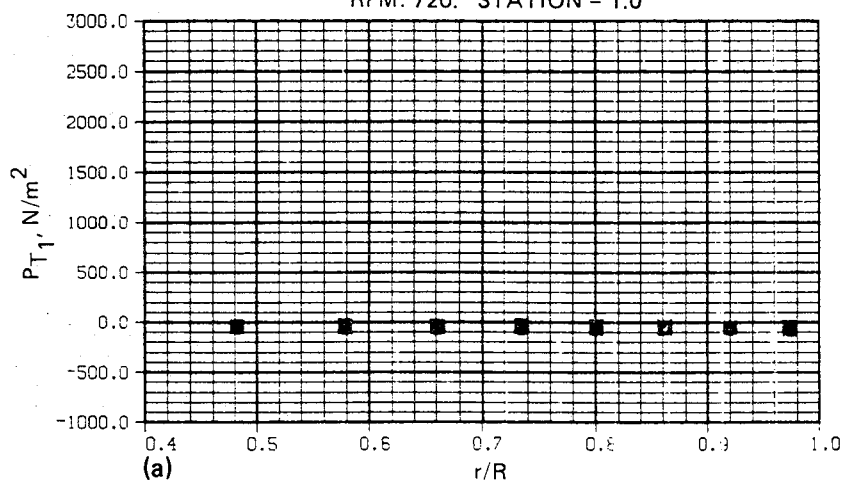


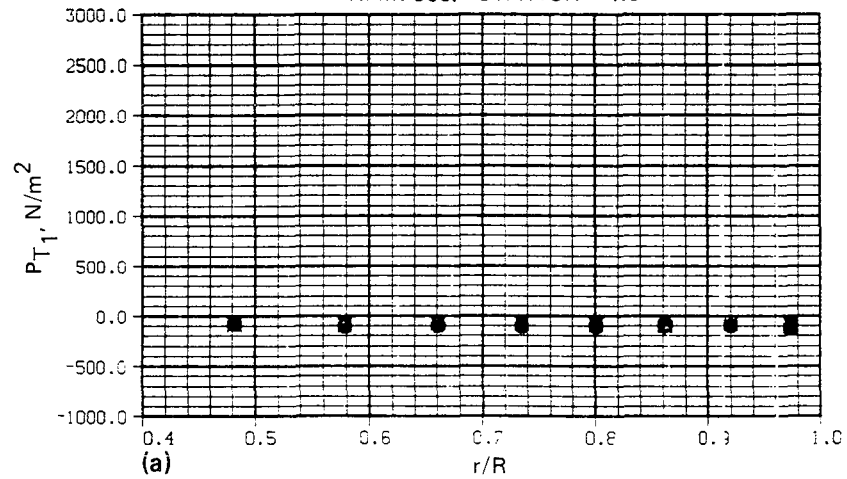
Figure D58.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

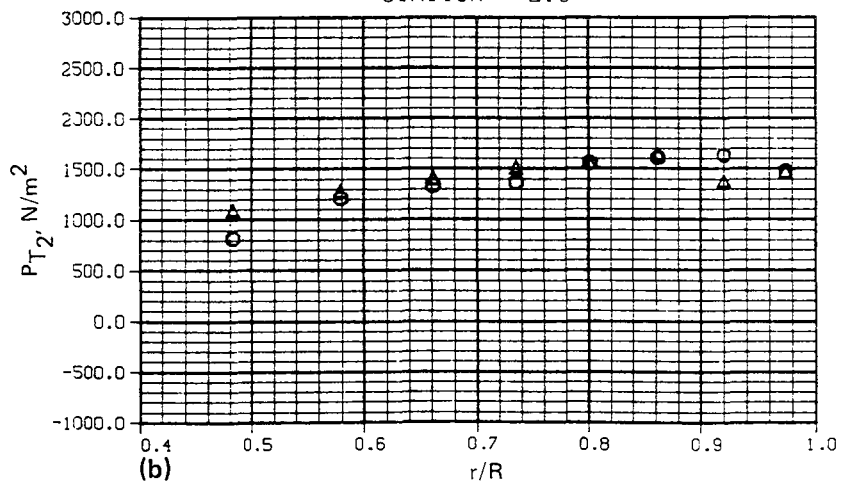
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 76. MASS FLOW: 71.97 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

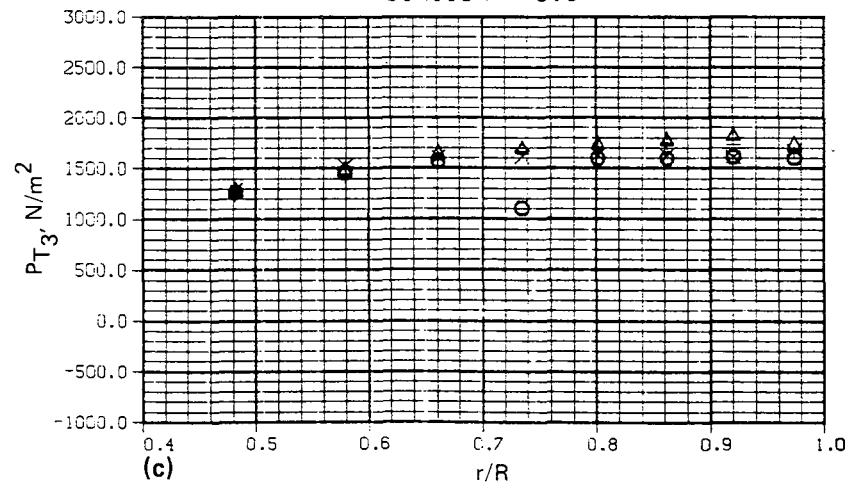


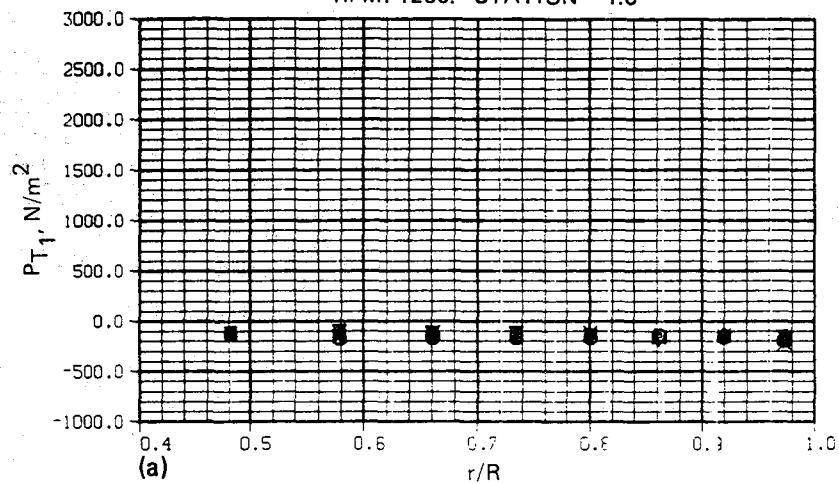
Figure D59.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

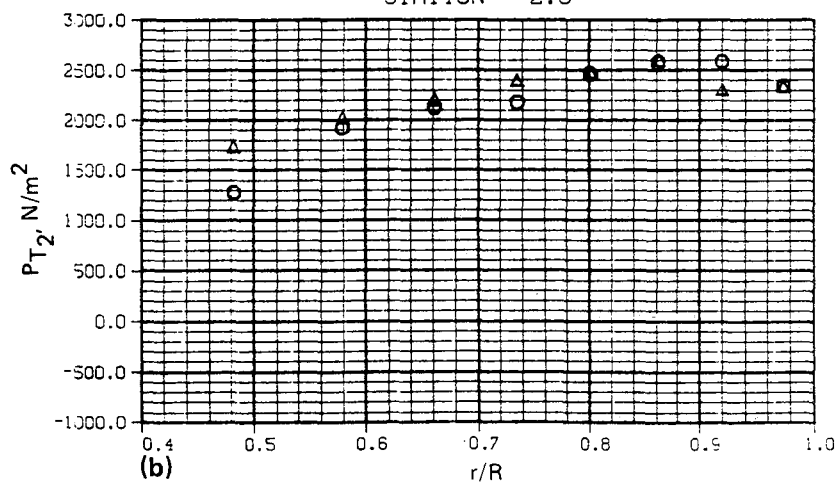
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 77. MASS FLOW: 192.41 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

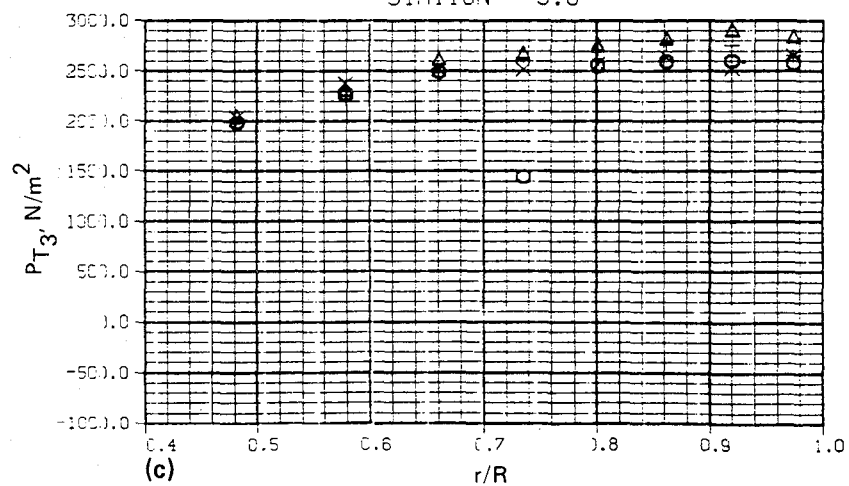


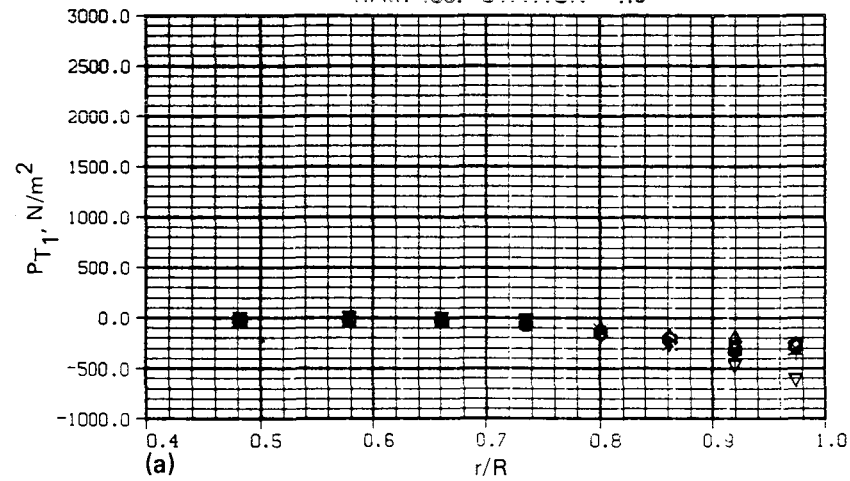
Figure D60.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

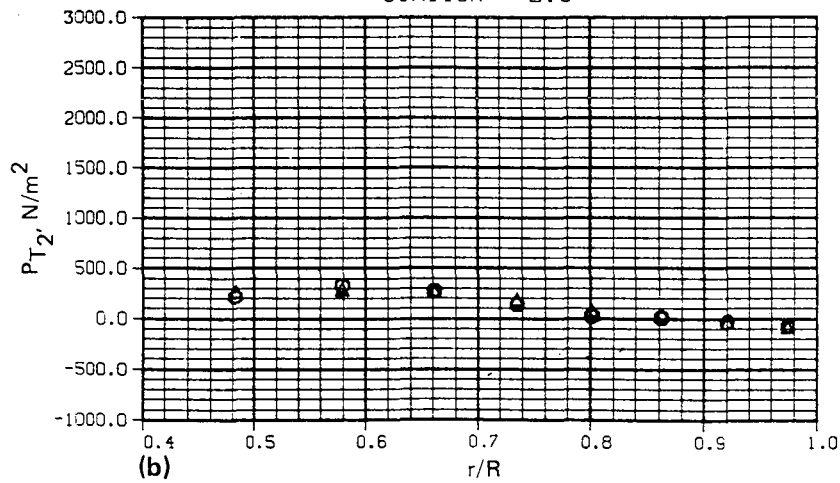
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 78. MASS FLOW: 10.30 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

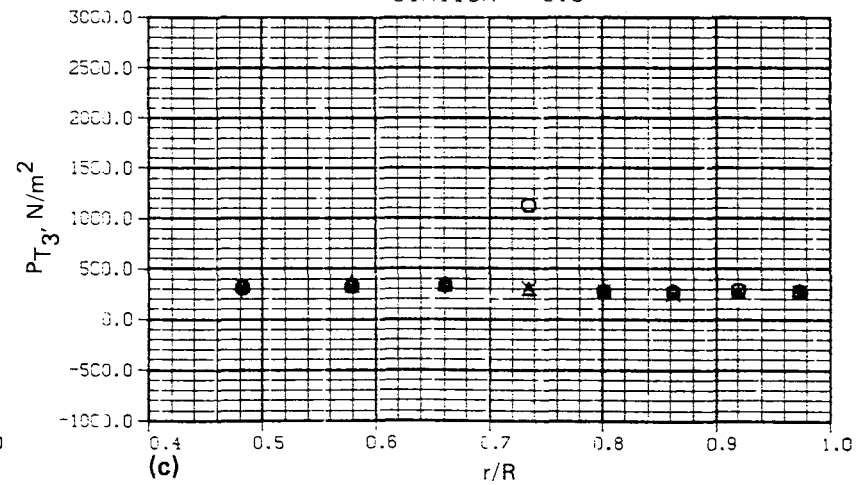


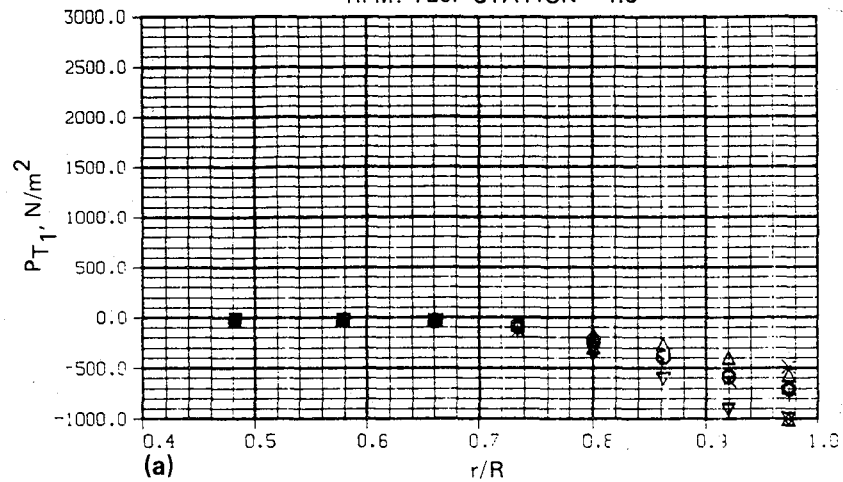
Figure D61.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

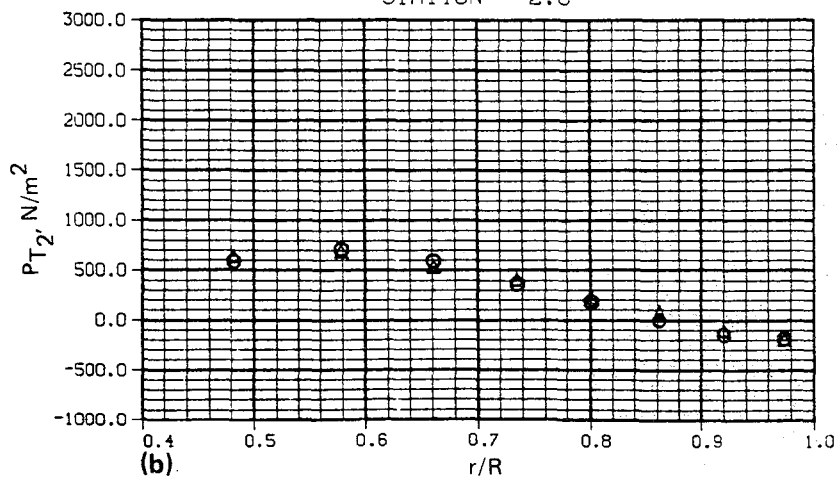
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 79. MASS FLOW: 16.15 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

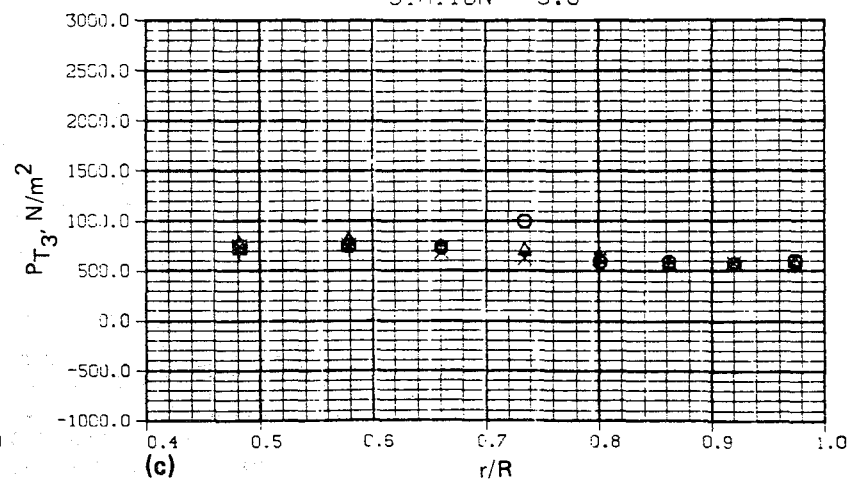


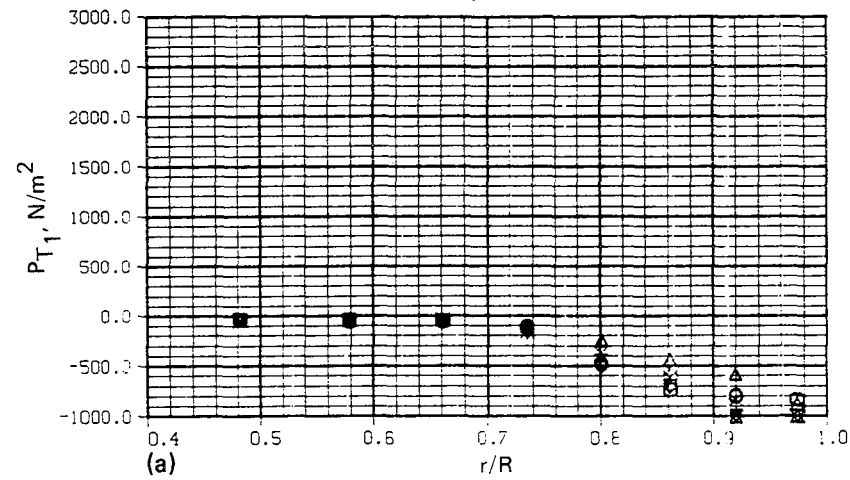
Figure D62.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

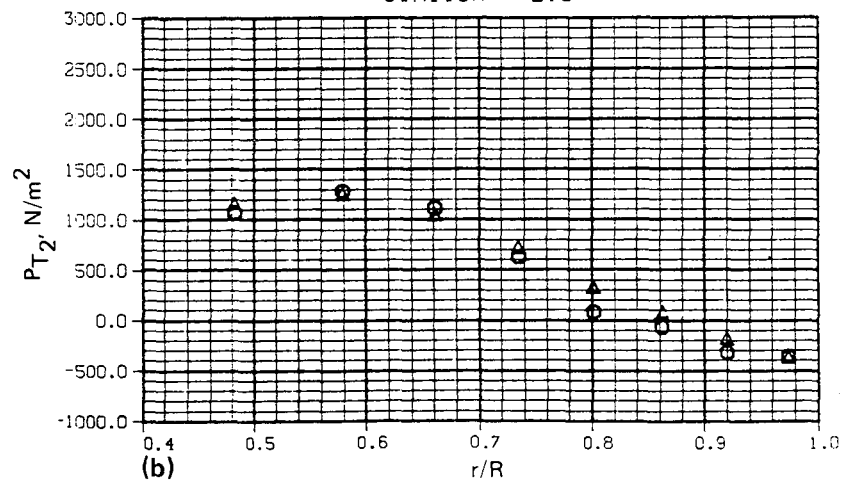
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 80. MASS FLOW: 22.96 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

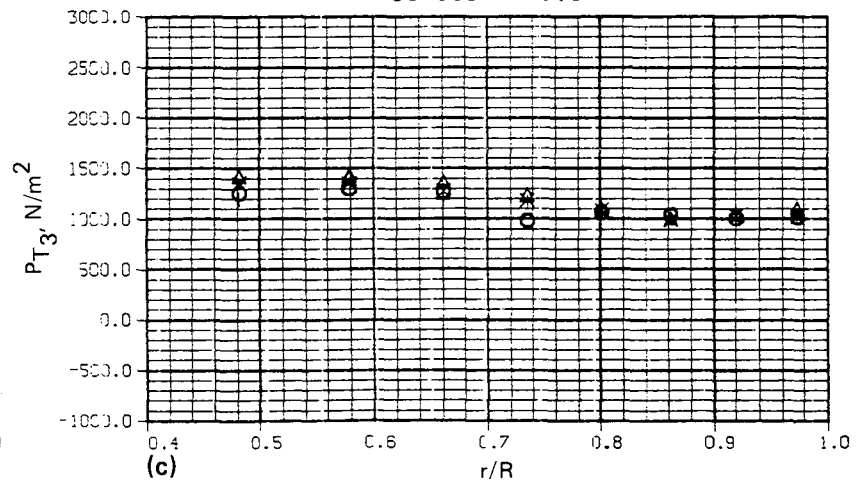


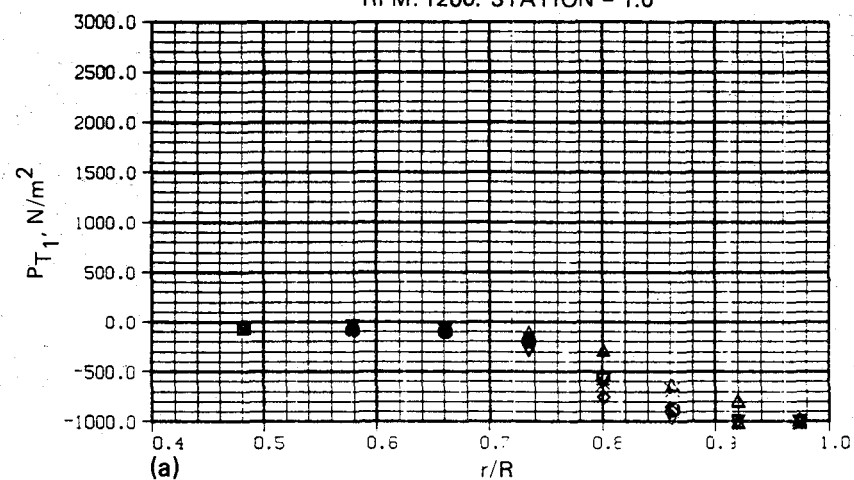
Figure D63.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

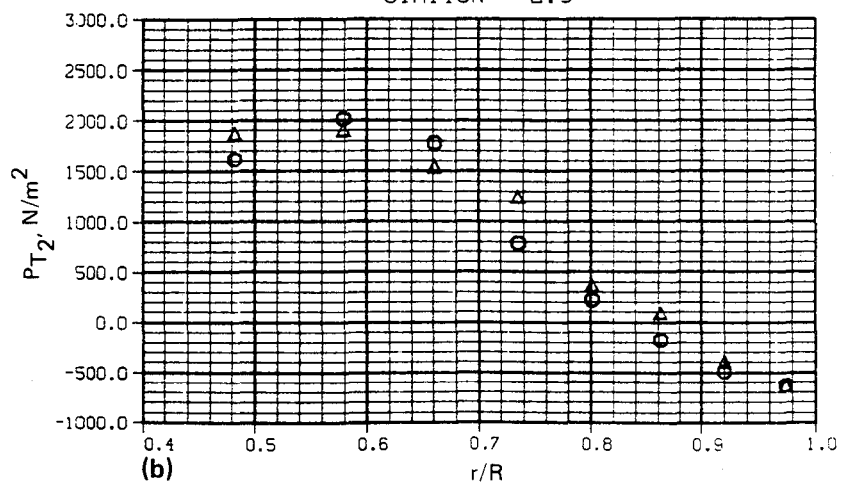
BLADE TYPE: 1. BLADE ANGLE: 34.0

RUN NO: 81. MASS FLOW: 30.96 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

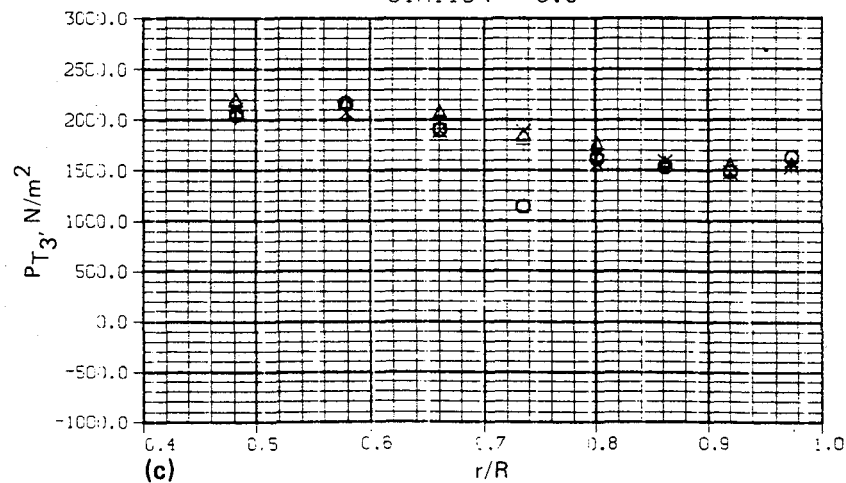


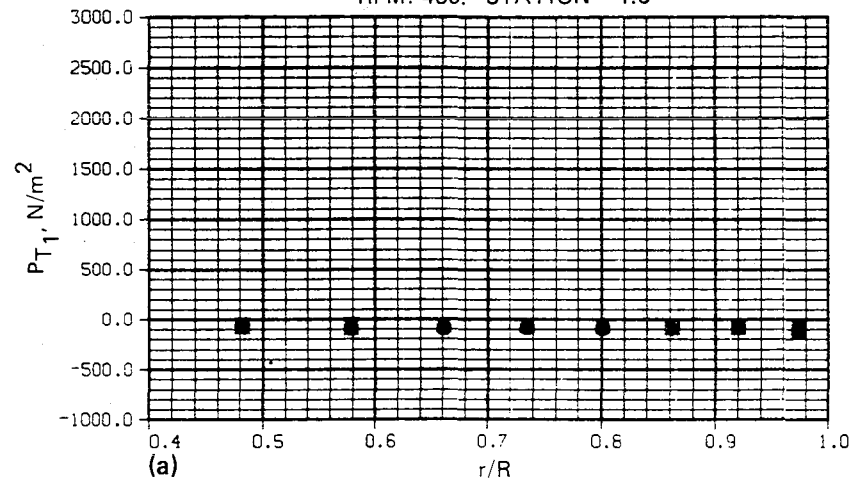
Figure D64.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

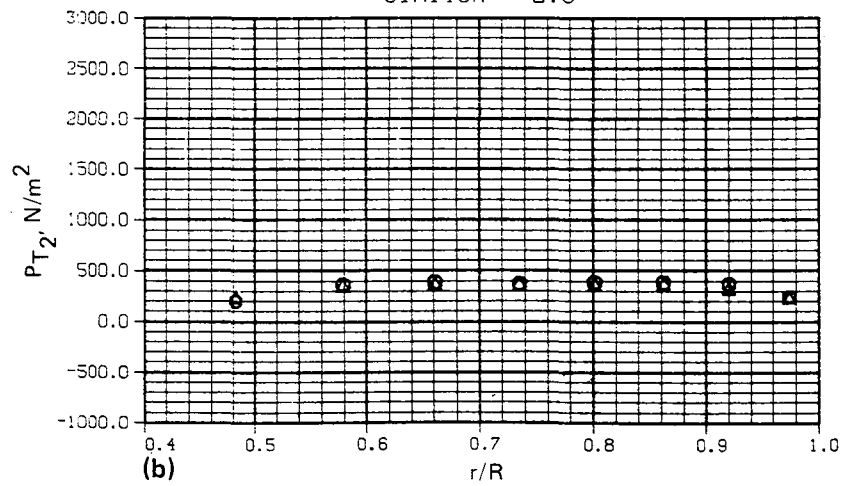
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 86. MASS FLOW: 66.61 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

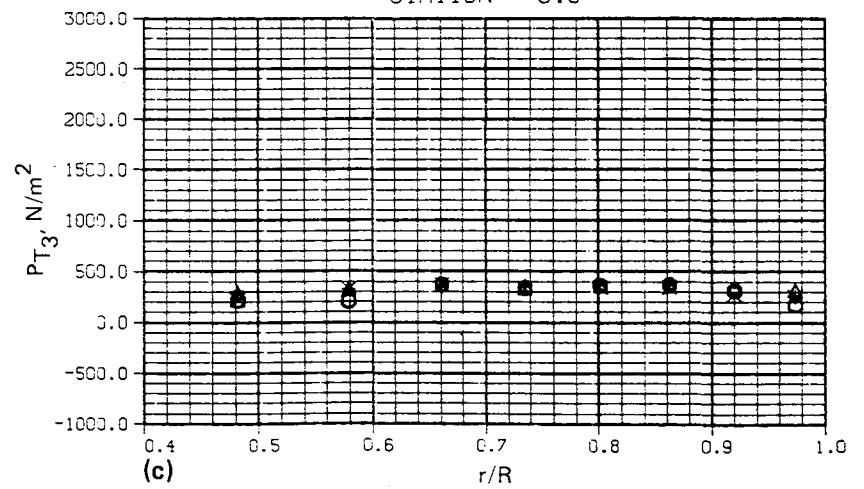


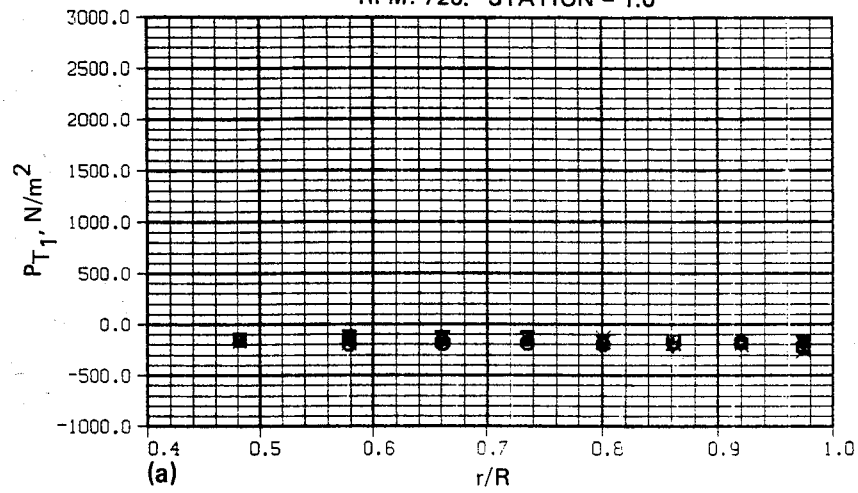
Figure D65.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

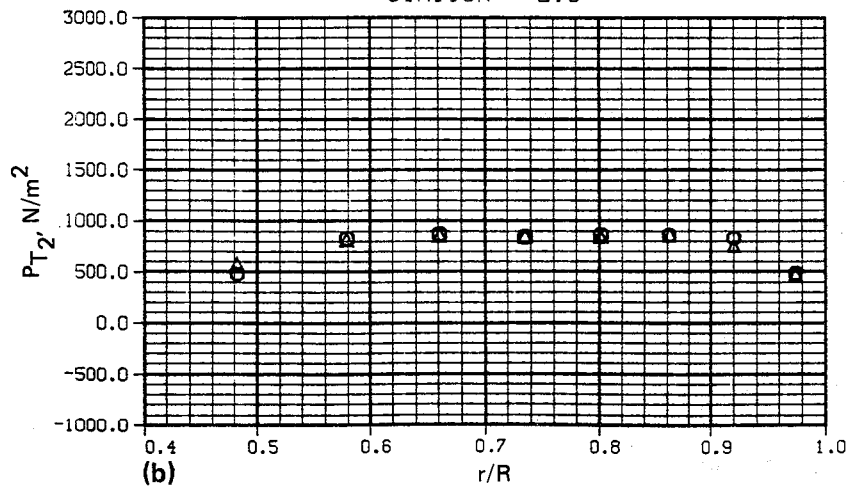
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 87. MASS FLOW: 101.04 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

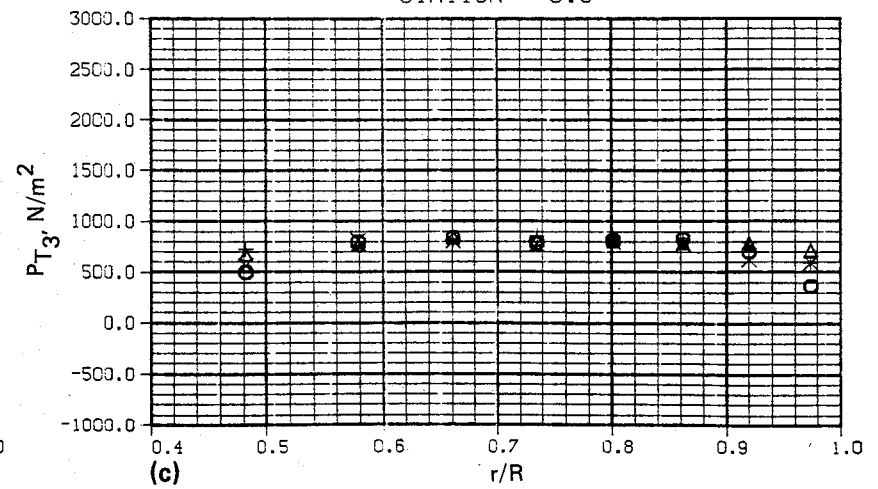


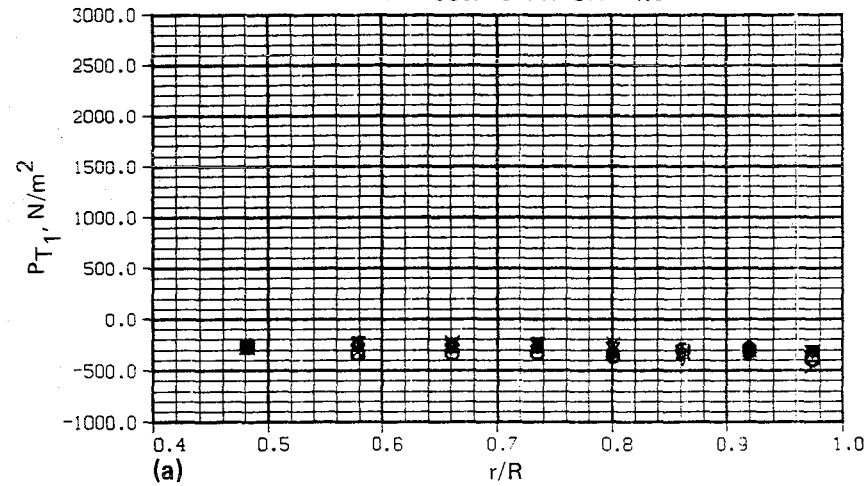
Figure D66.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

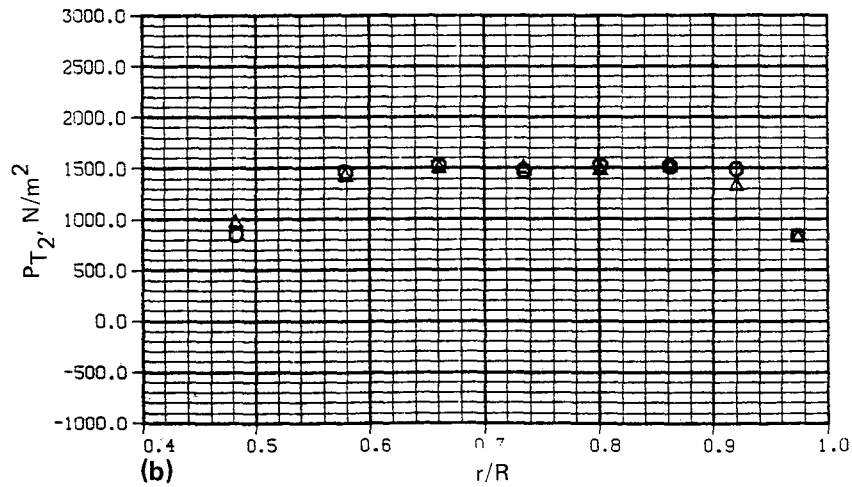
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 88 MASS FLOW:135.31slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

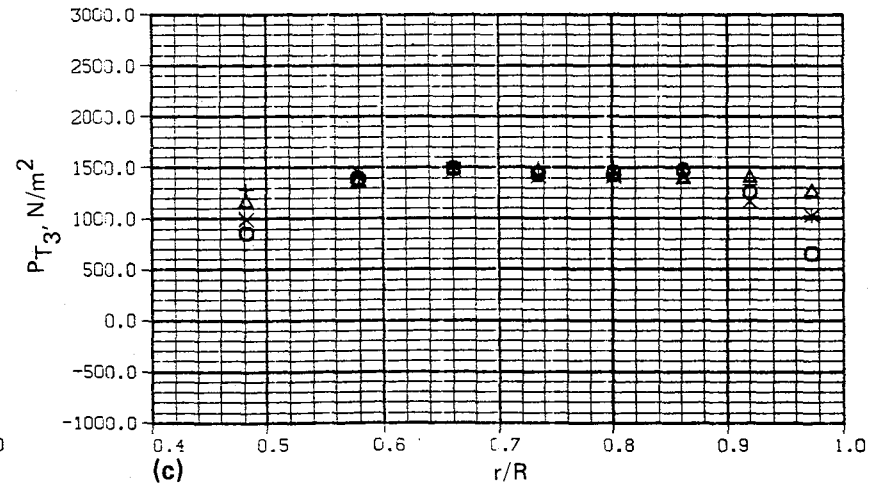


Figure D67.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 89. MASS FLOW: 170.84 slugs/sec

RPM: 1200. STATION = 1.0

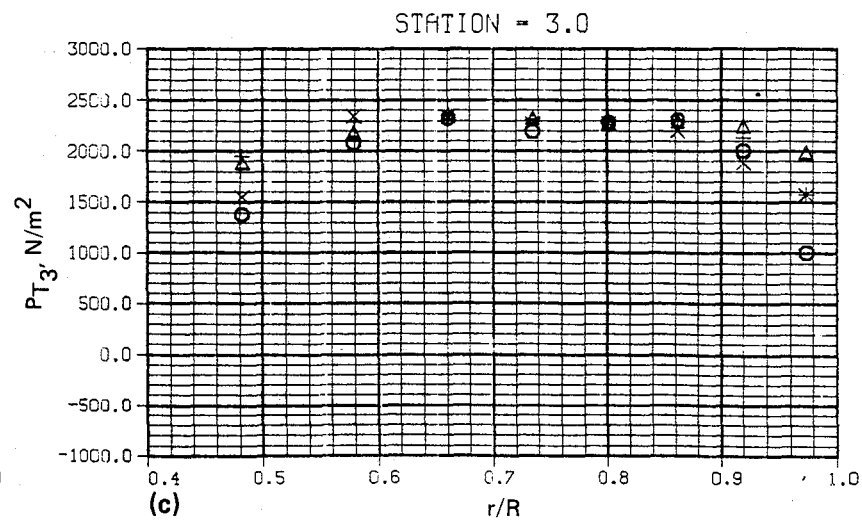
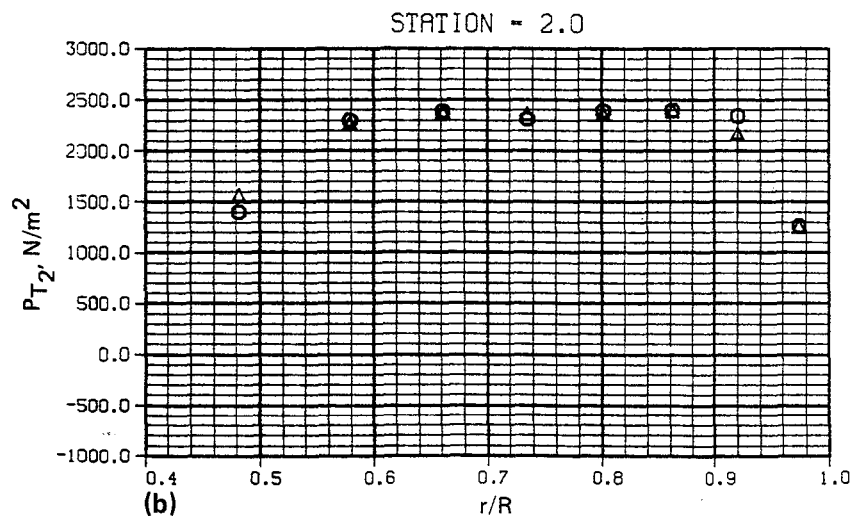
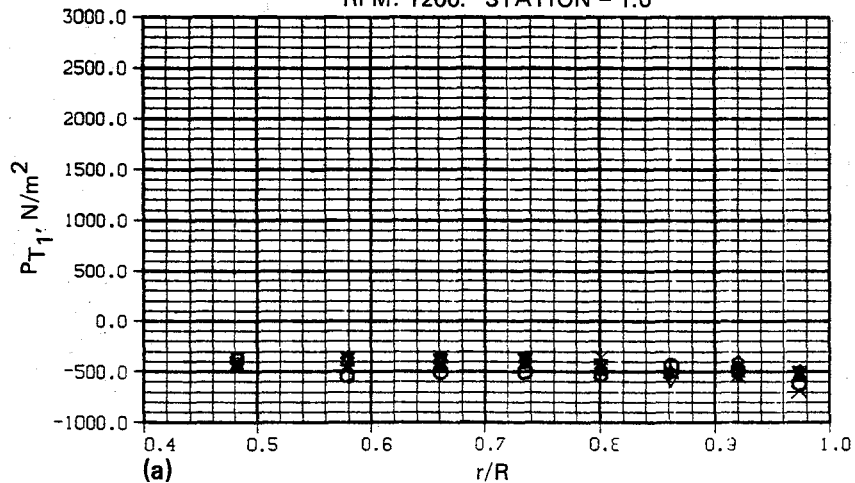


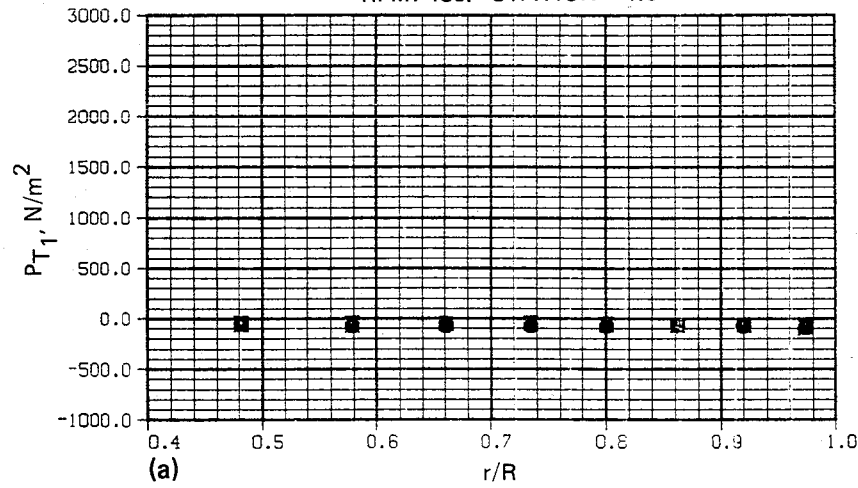
Figure D68.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

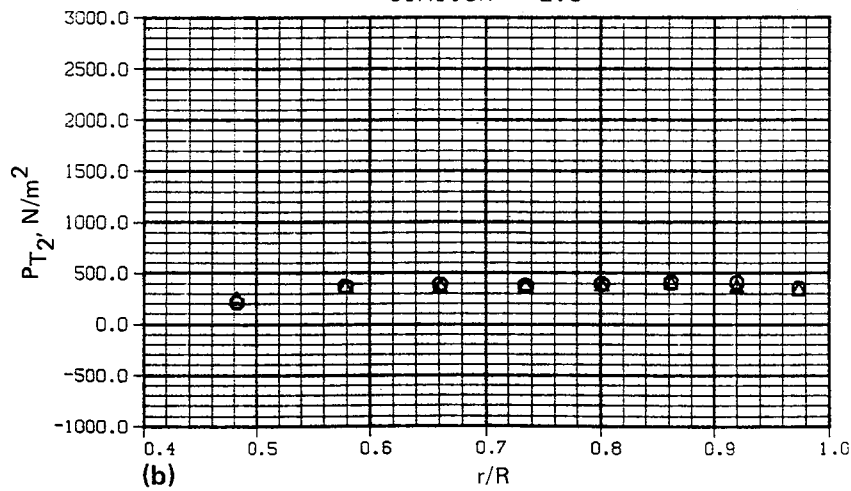
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 90. MASS FLOW: 60.47 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

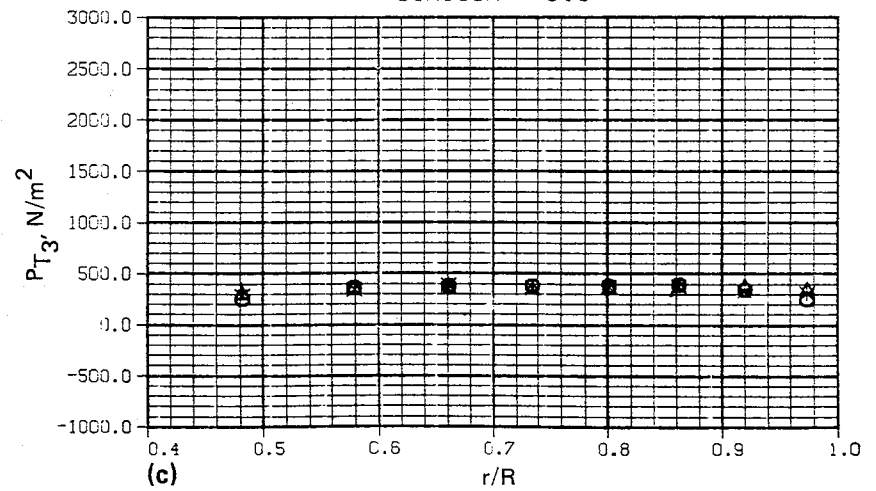


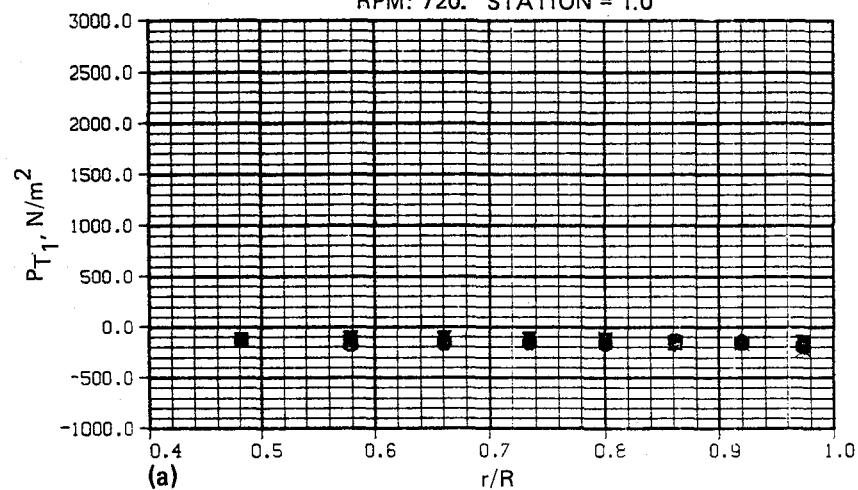
Figure D69.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

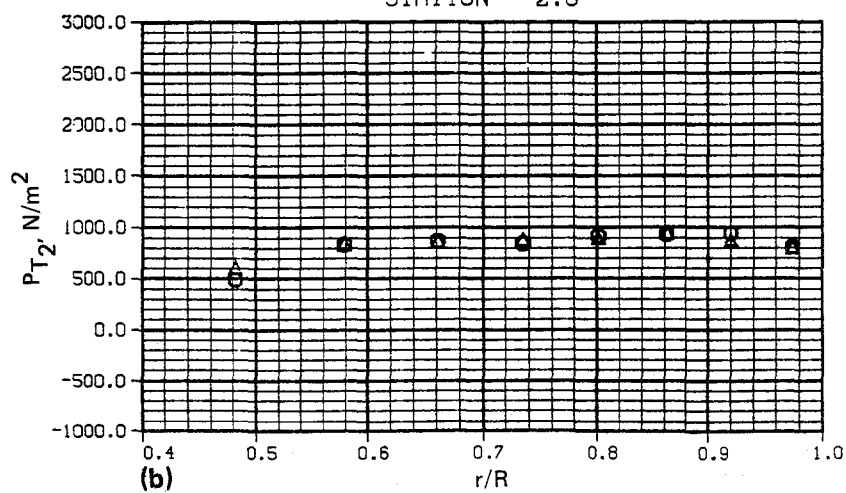
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 91. MASS FLOW: 91.94 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

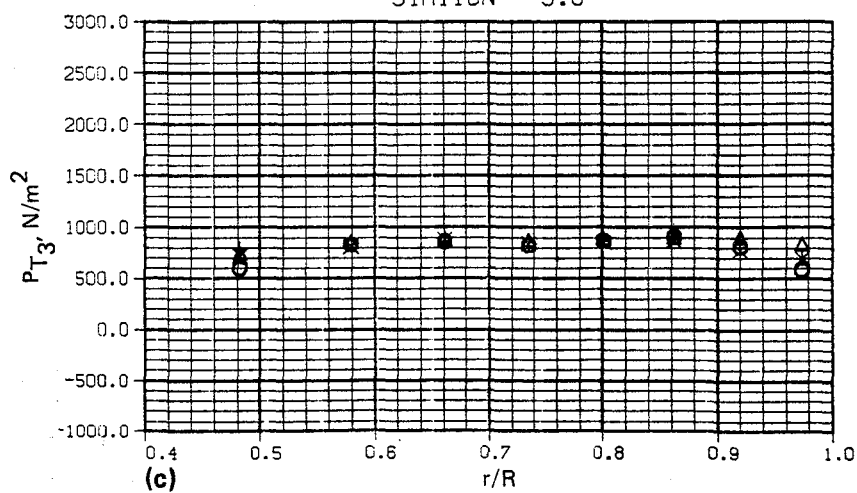


Figure D70.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 92. MASS FLOW: 123.21 slugs/sec

RPM: 960. STATION = 1.0

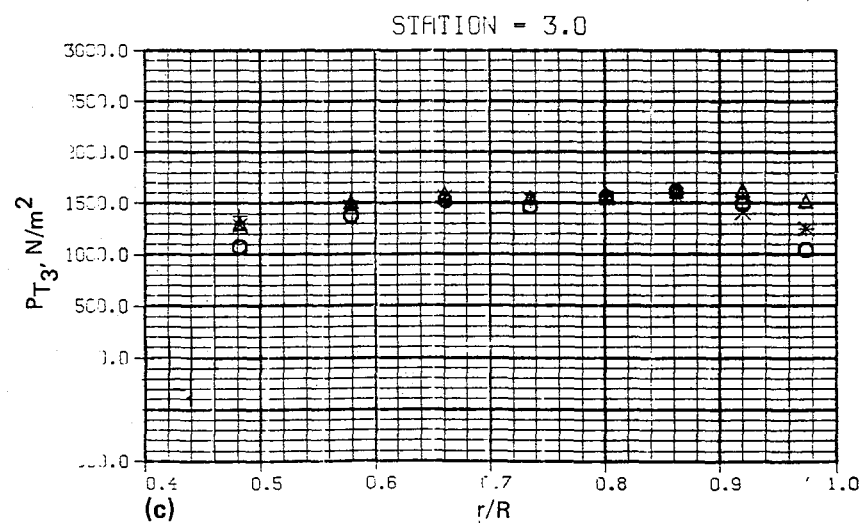
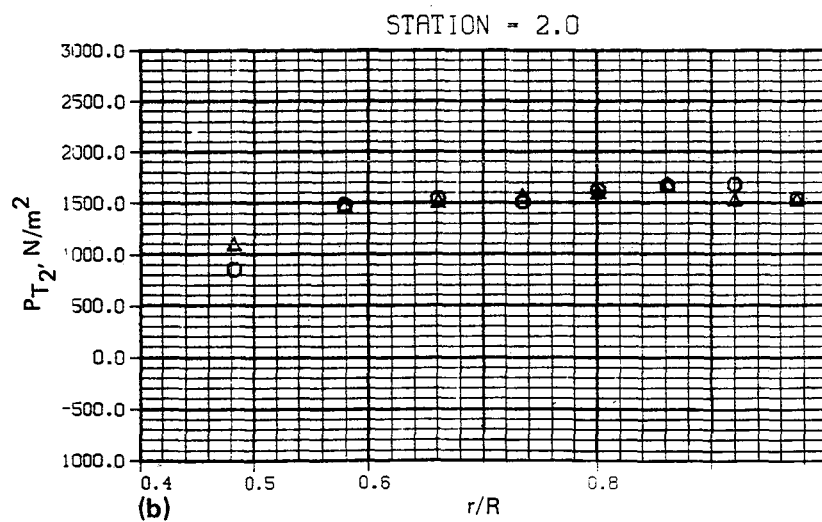
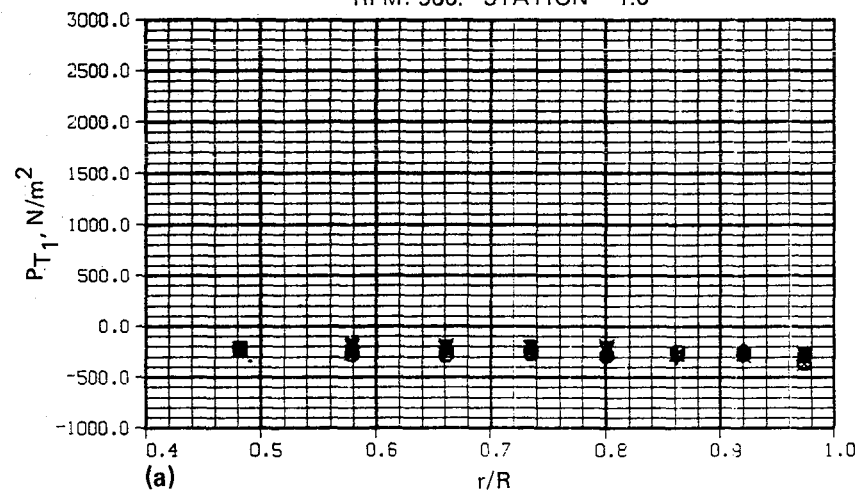


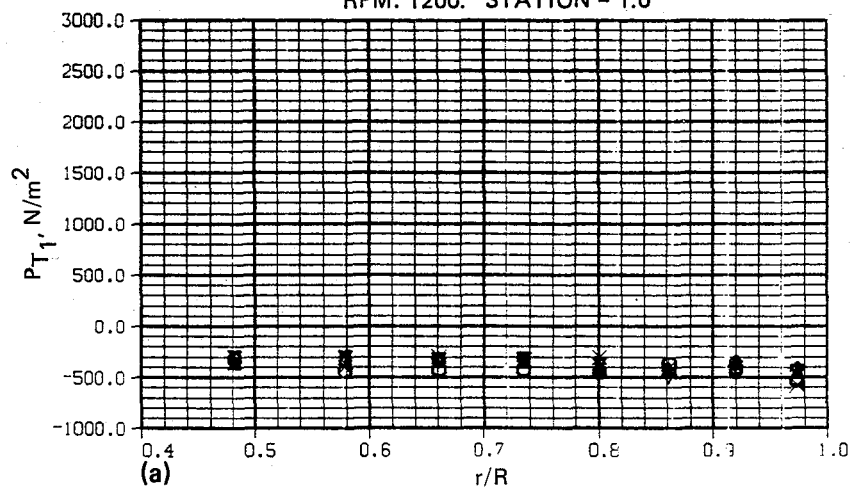
Figure D71.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

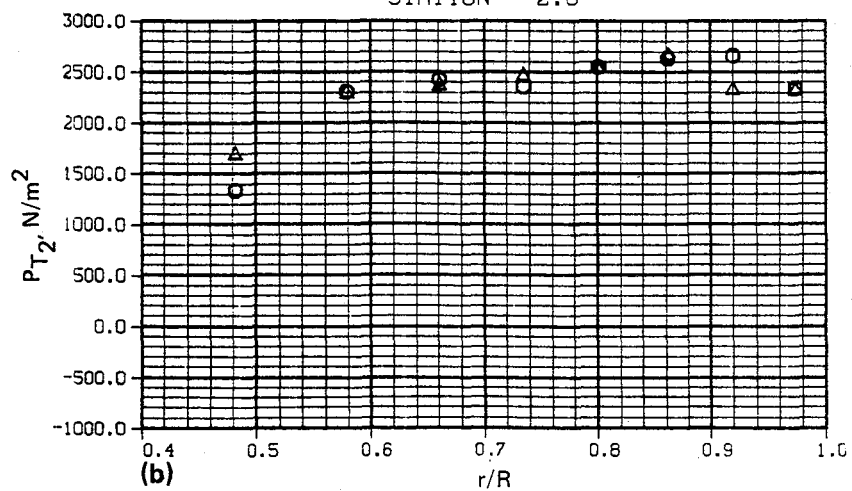
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 93. MASS FLOW: 155.23 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

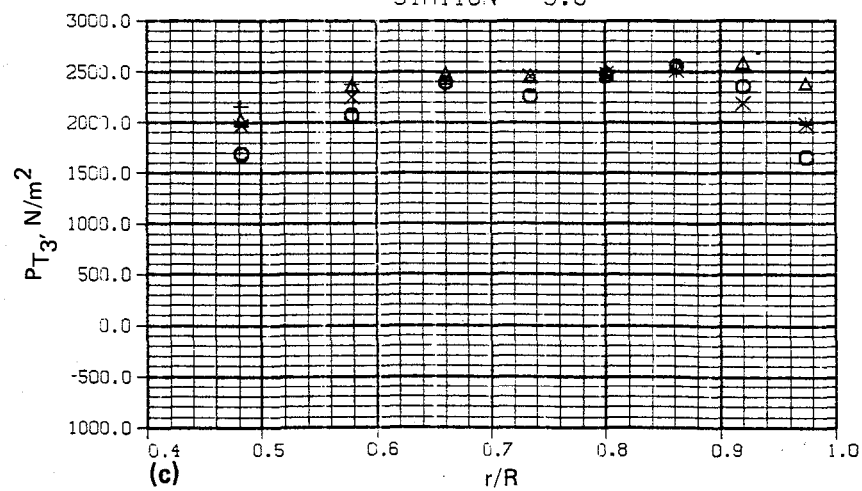


Figure D72.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 94. MASS FLOW: 54.68 slugs/sec

RPM: 480. STATION = 1.0

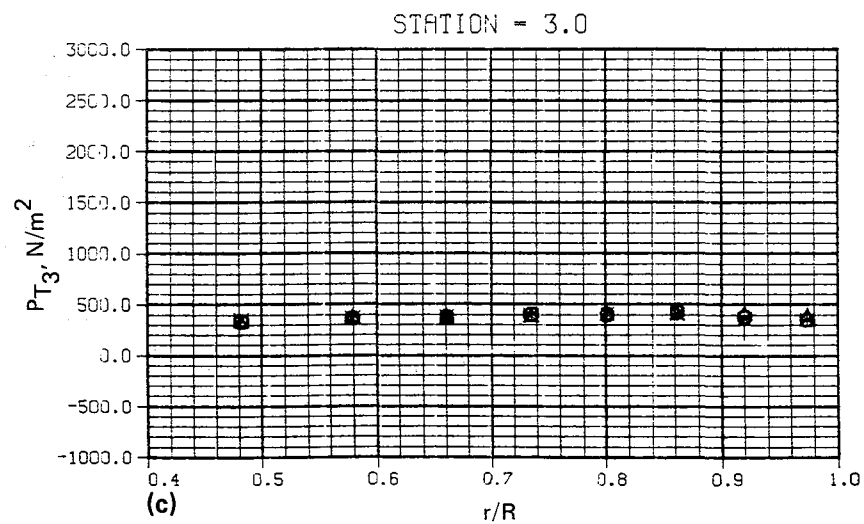
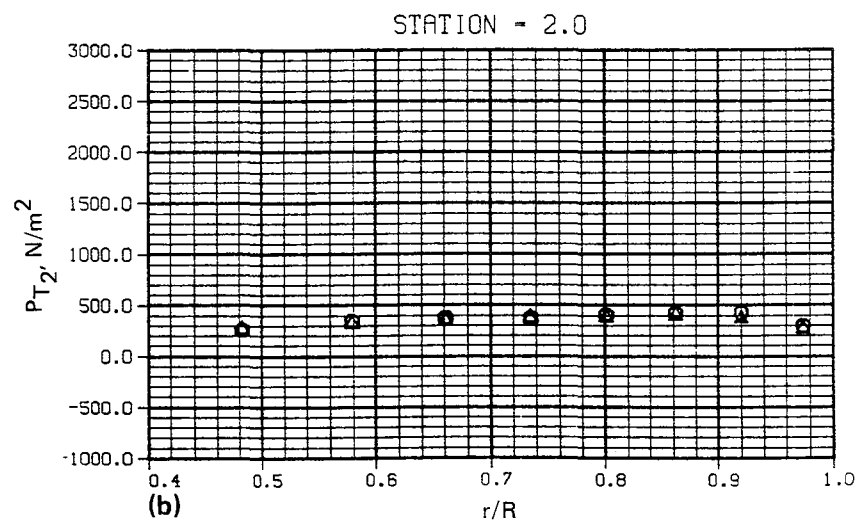
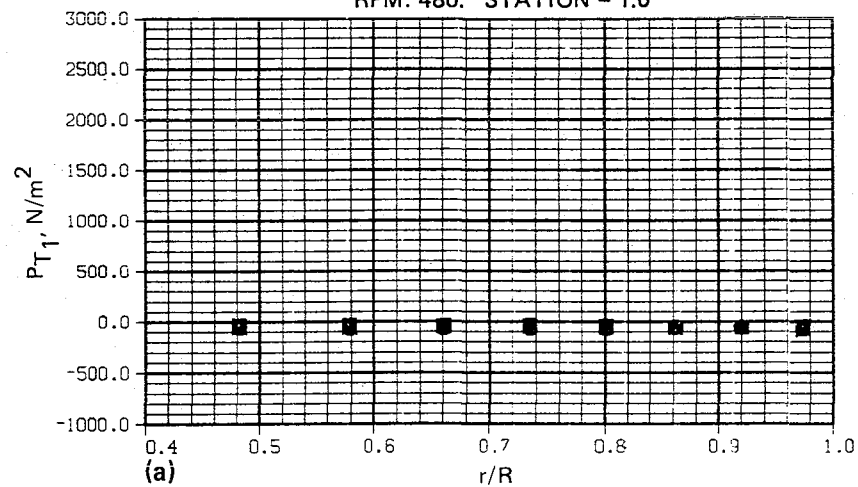


Figure D73.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 95. MASS FLOW: 83.00 slugs/sec

RPM: 720. STATION = 1.0

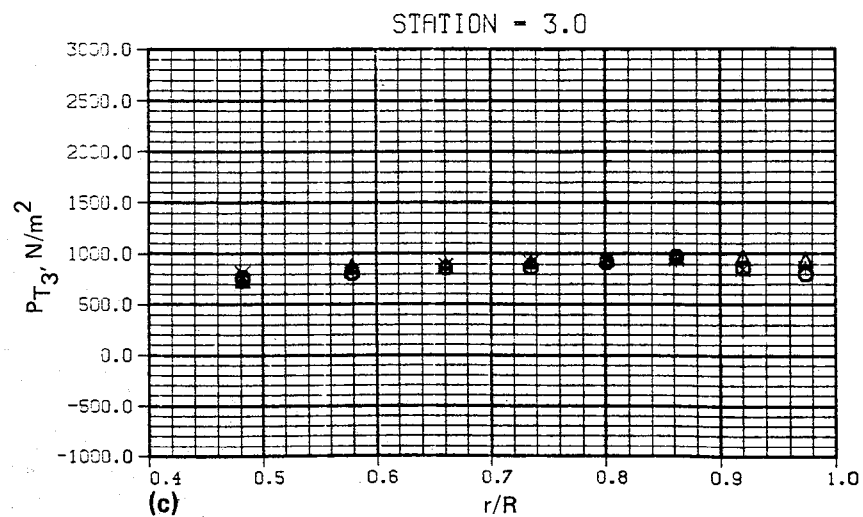
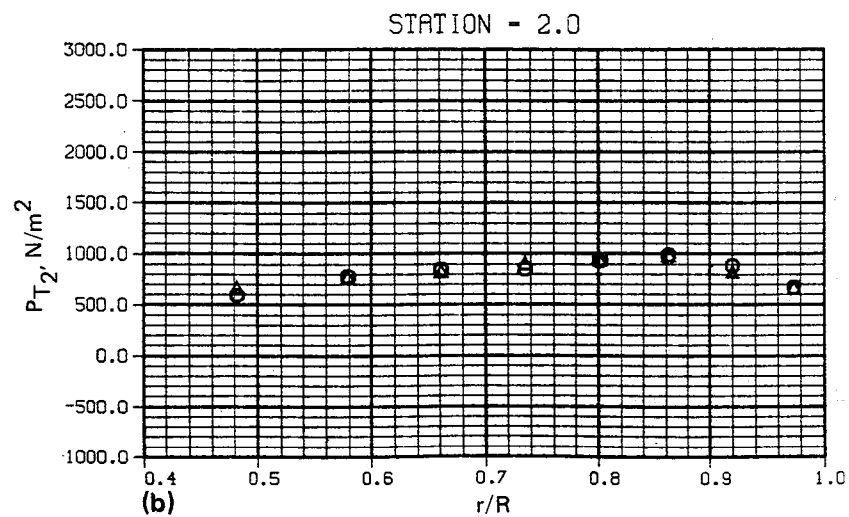
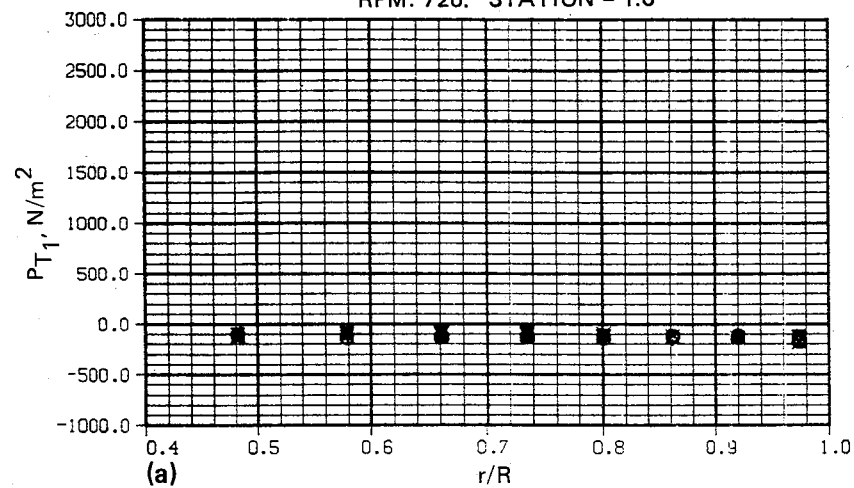


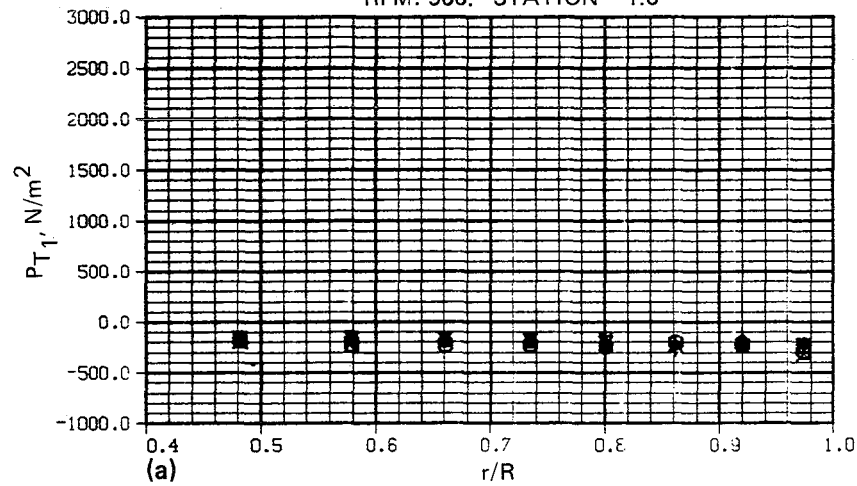
Figure D74.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

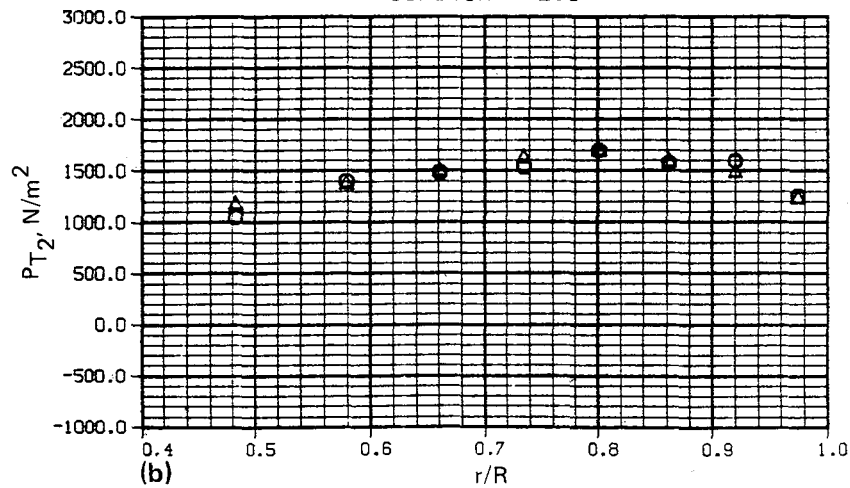
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 96. MASS FLOW: 112.49 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

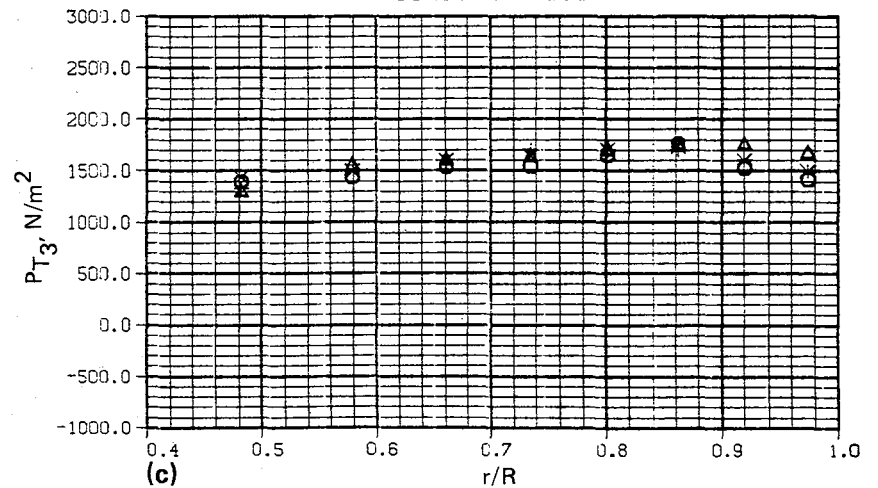


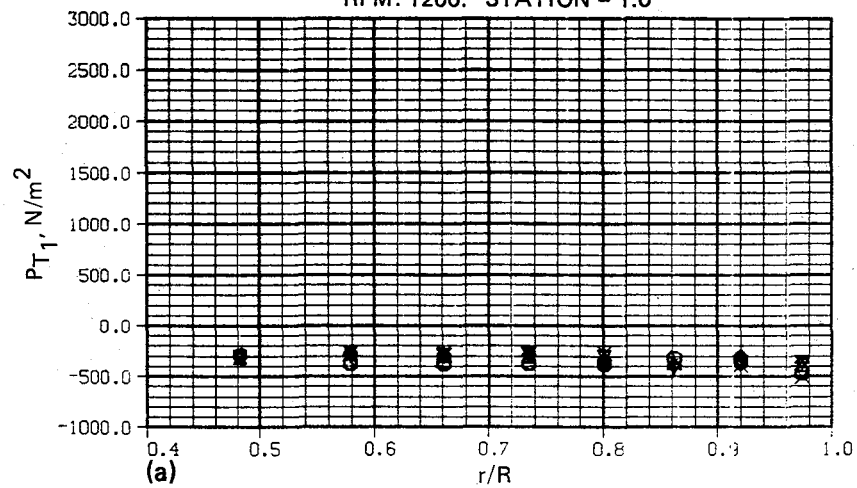
Figure D75.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

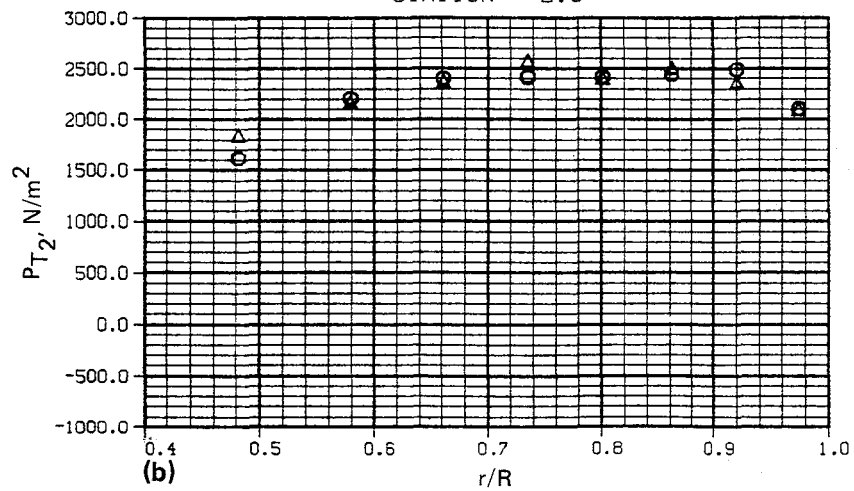
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 97. MASS FLOW: 144.92 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

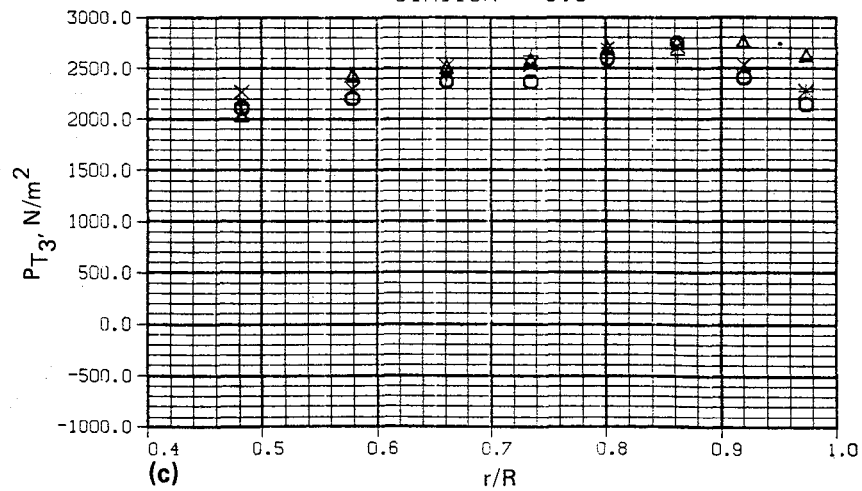


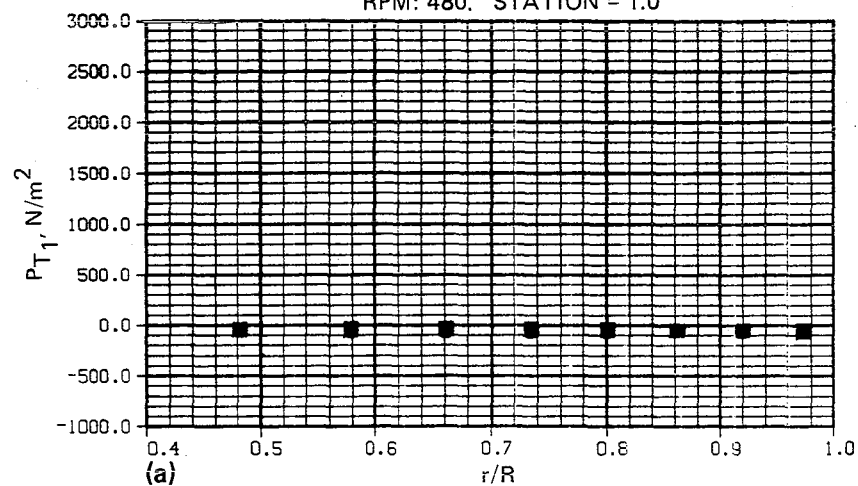
Figure D76.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

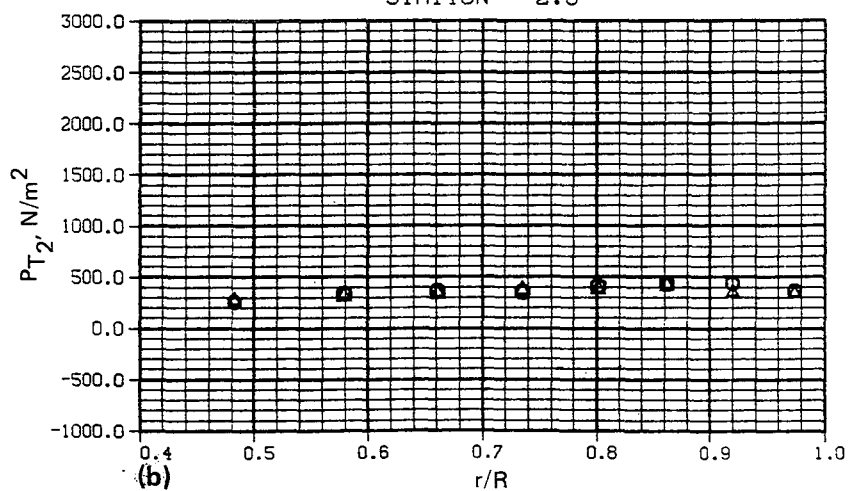
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 98. MASS FLOW: 50.96 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

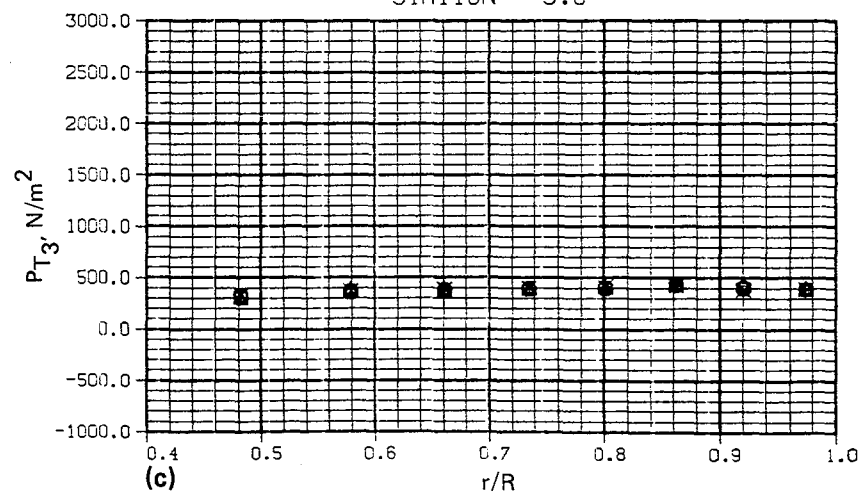


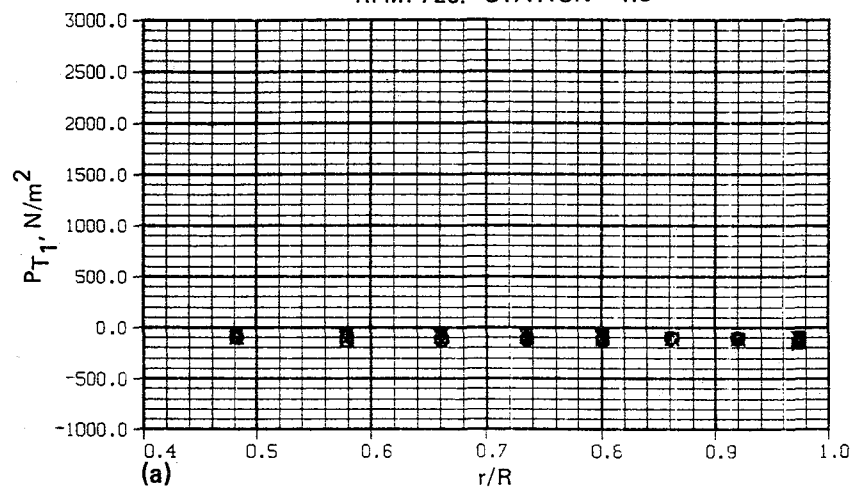
Figure D77.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

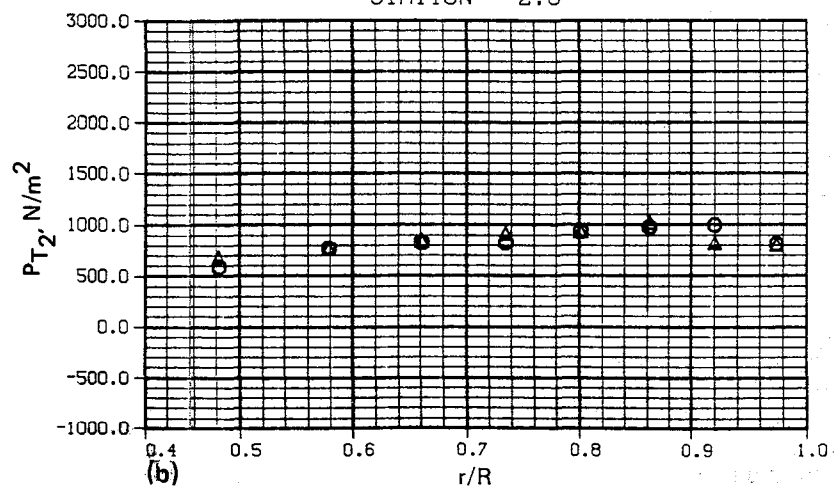
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 99. MASS FLOW: 77.66 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

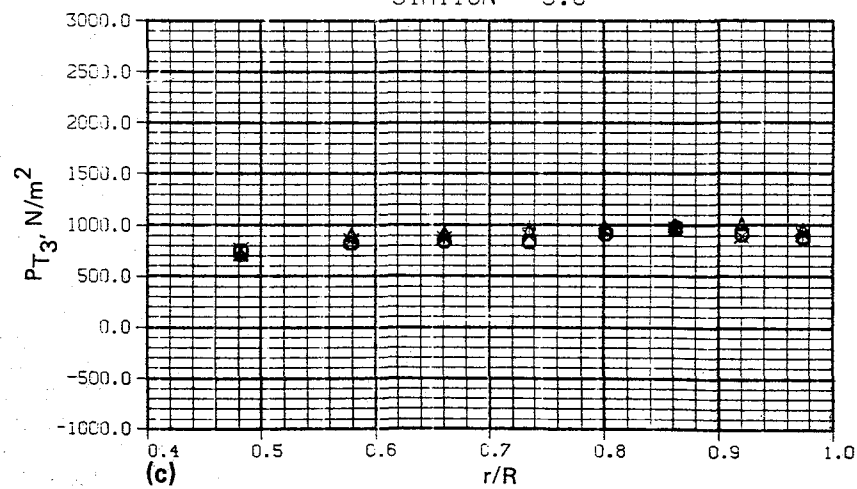


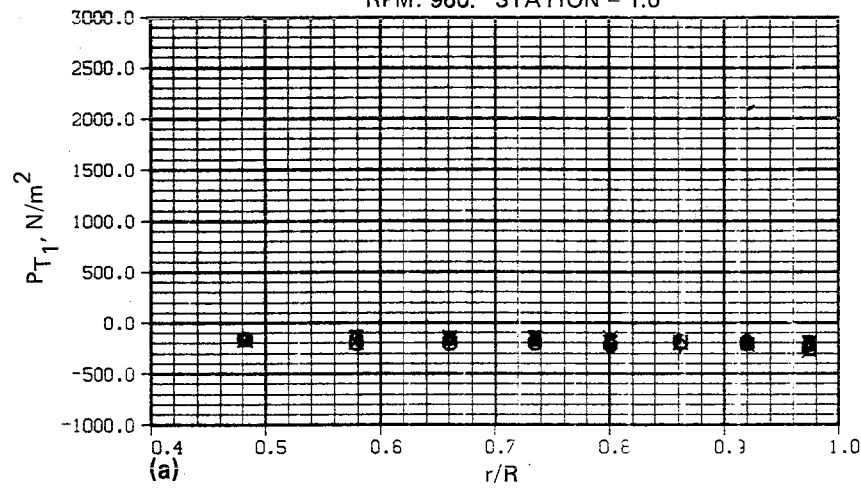
Figure D78.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

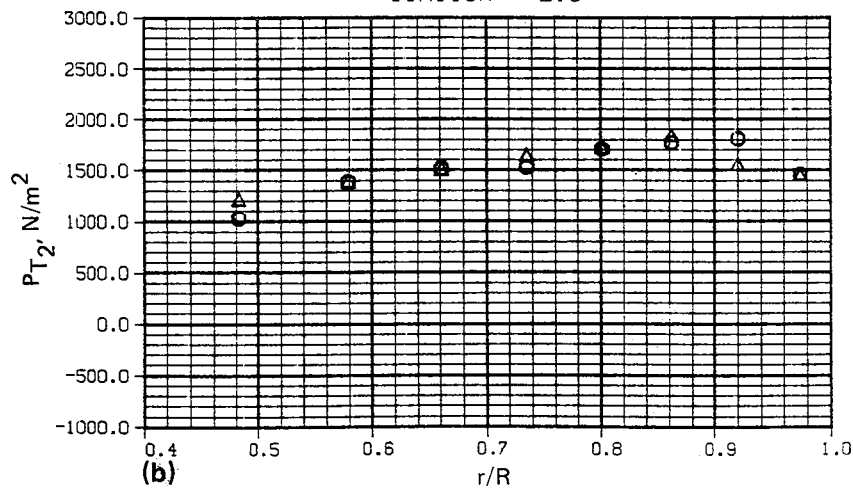
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 100. MASS FLOW: 105.13 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

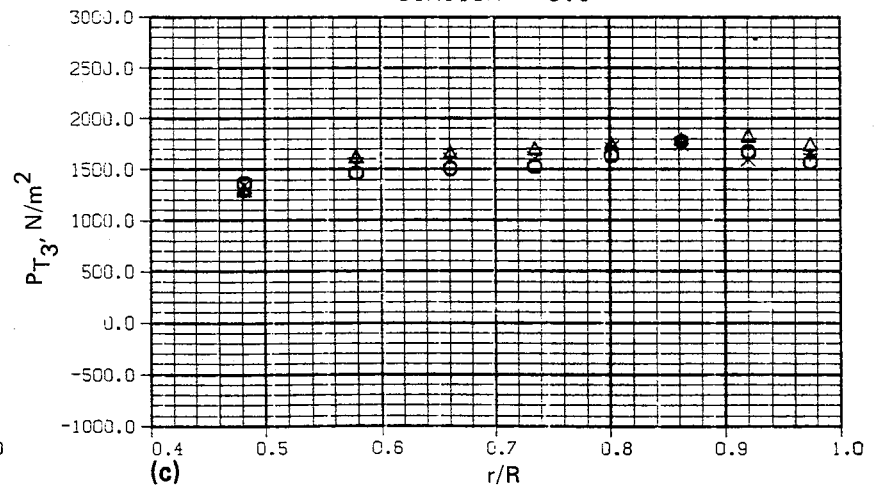


Figure D79.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 101. MASS FLOW: 133.75 slugs/sec

RPM: 1200. STATION = 1.0

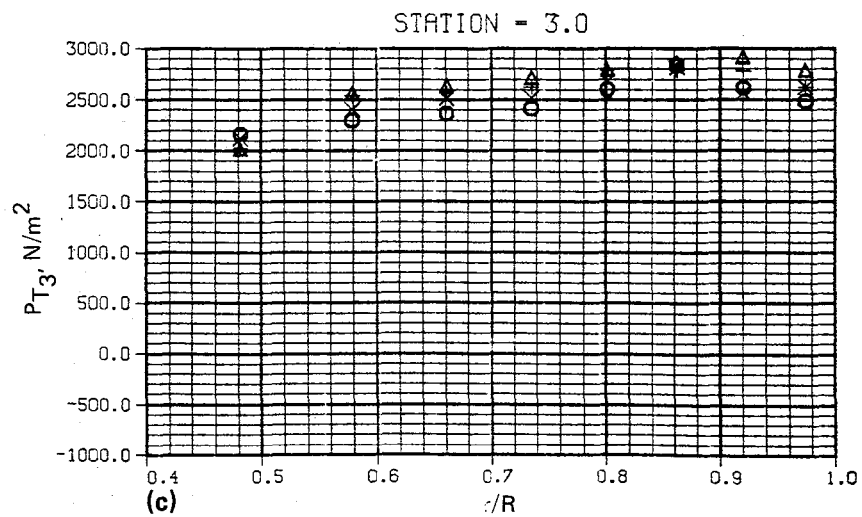
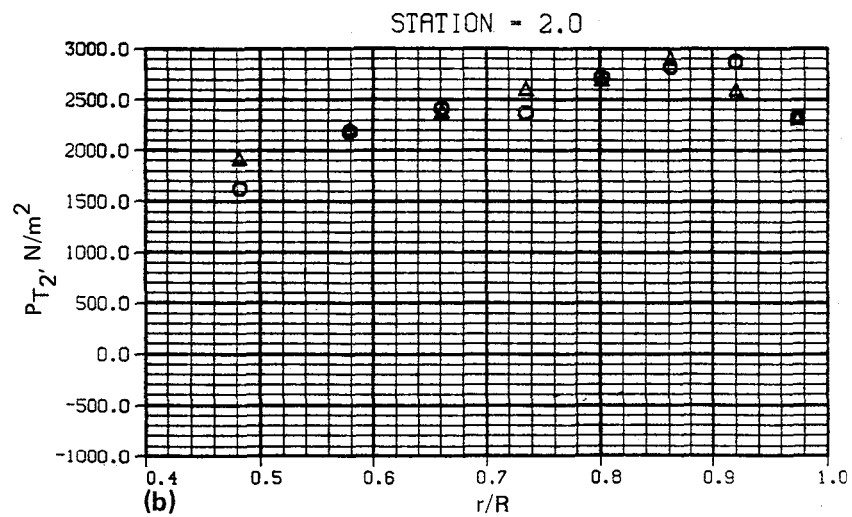
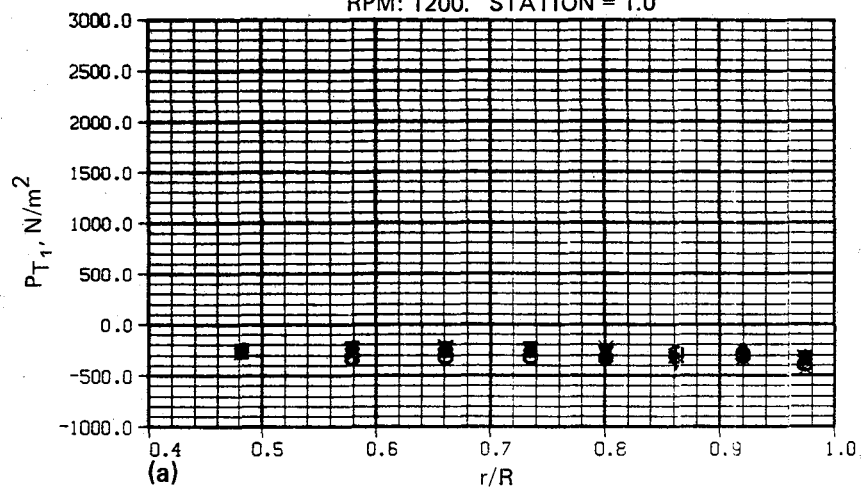


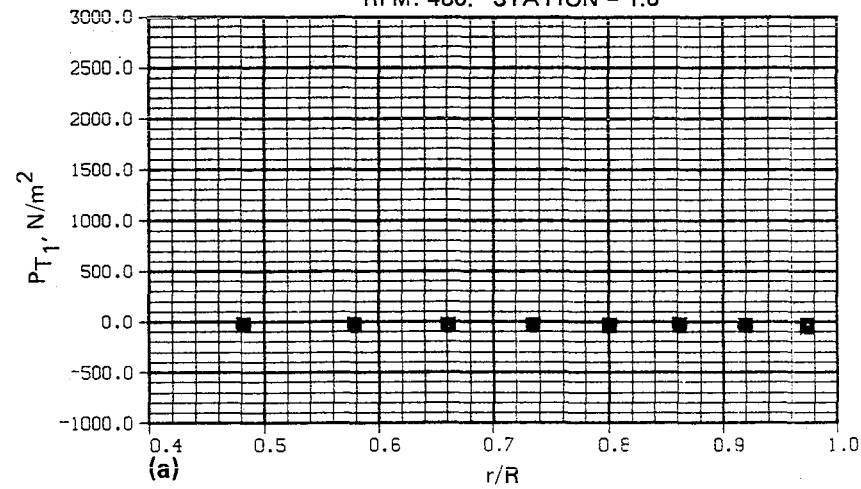
Figure D80.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

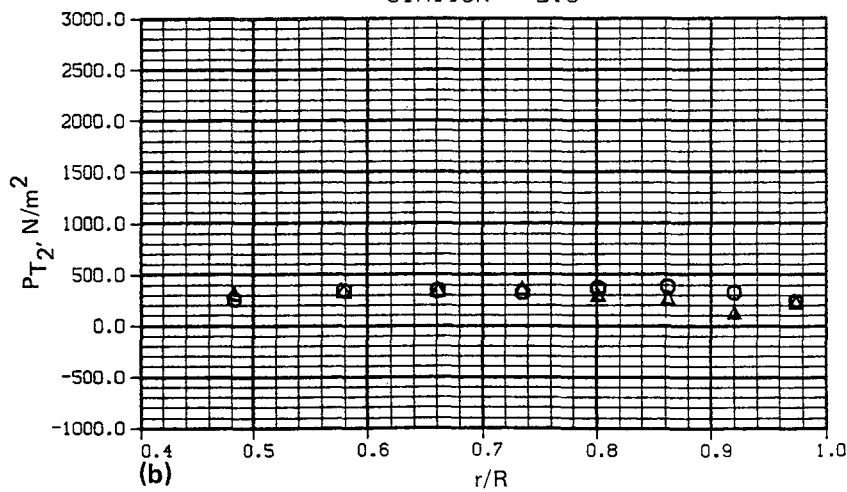
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 102. MASS FLOW: 43.28 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

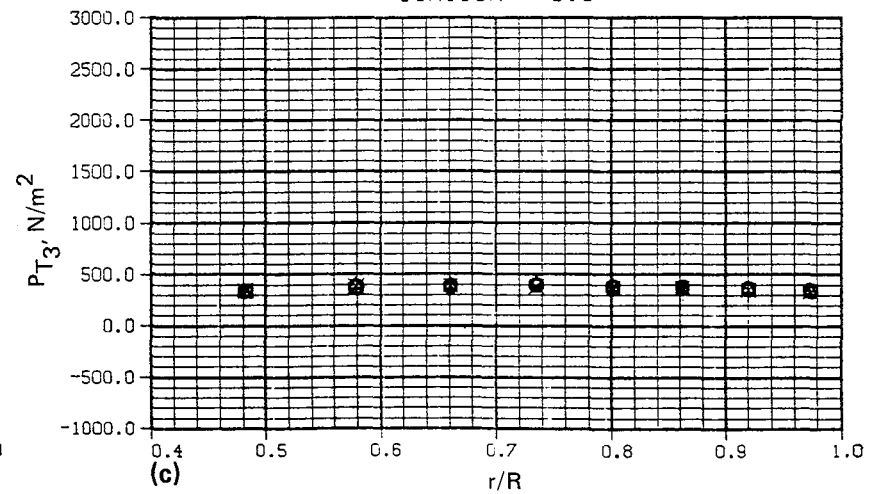


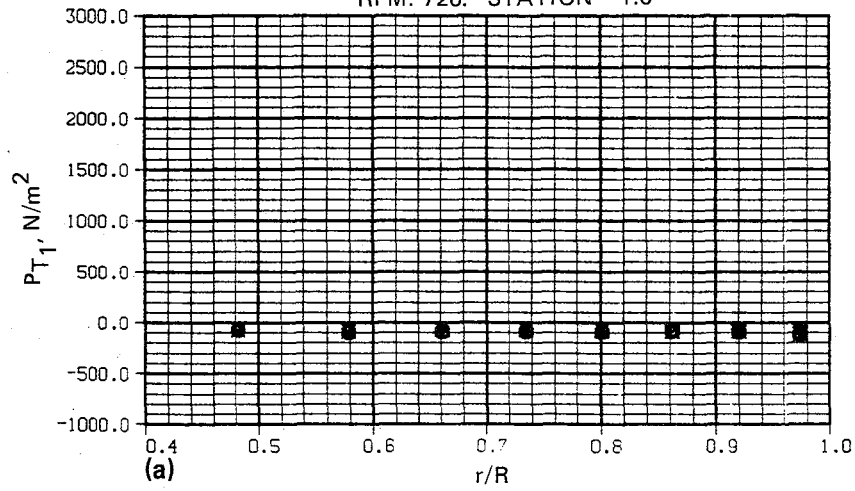
Figure D81.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

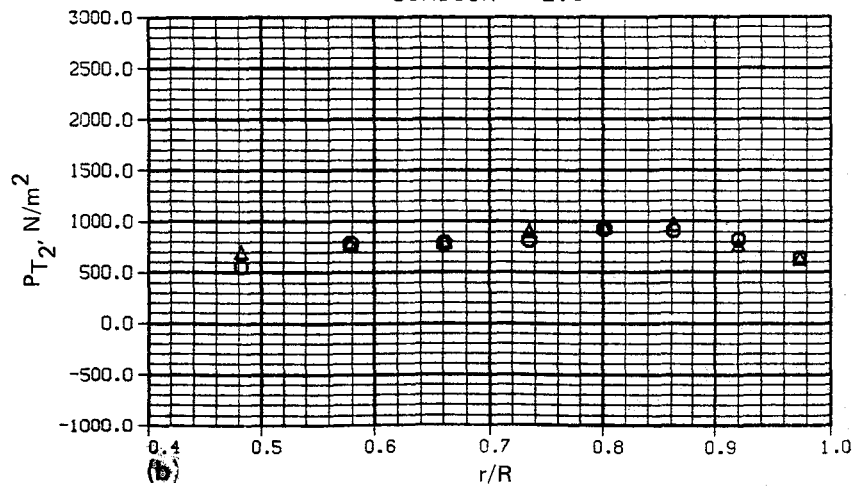
BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 103. MASS FLOW: 66.78 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

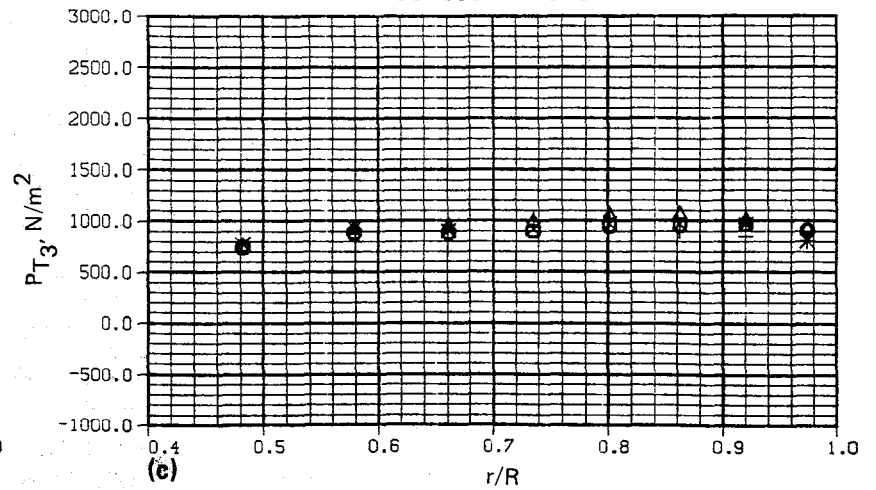


Figure D82.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 44.3

RUN NO: 104. MASS FLOW: 91.20 slugs/sec

RPM: 960. STATION = 1.0

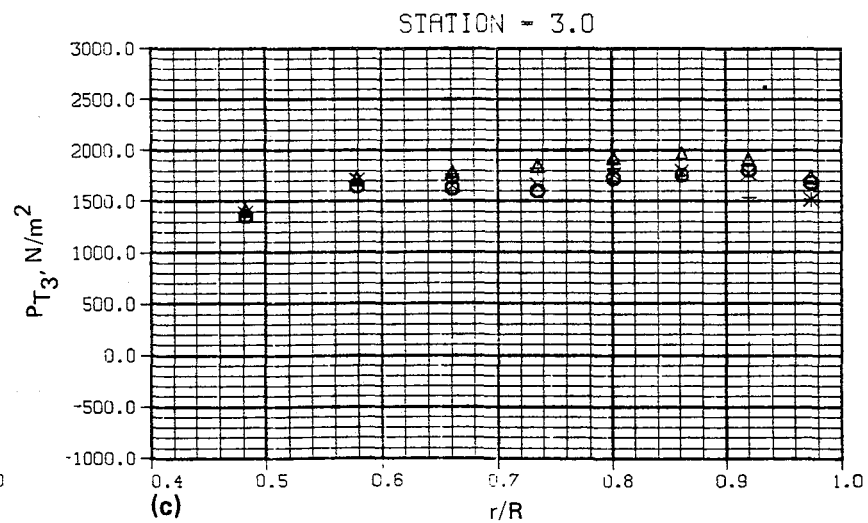
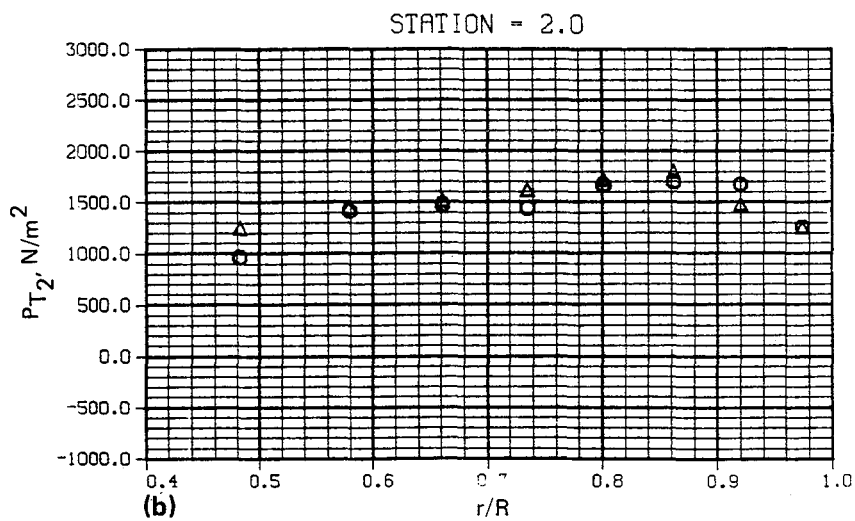
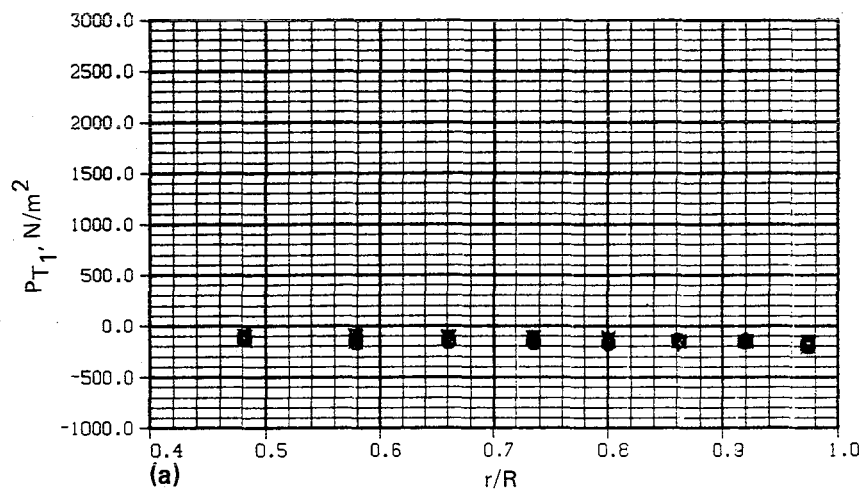


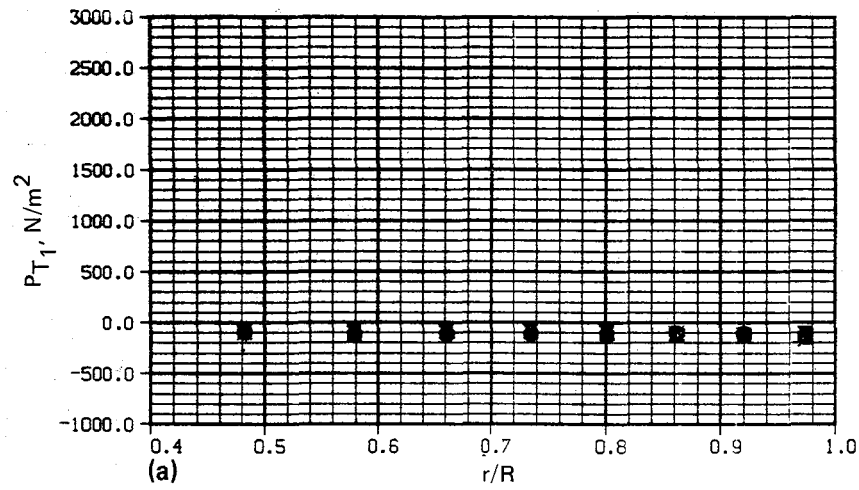
Figure D83.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

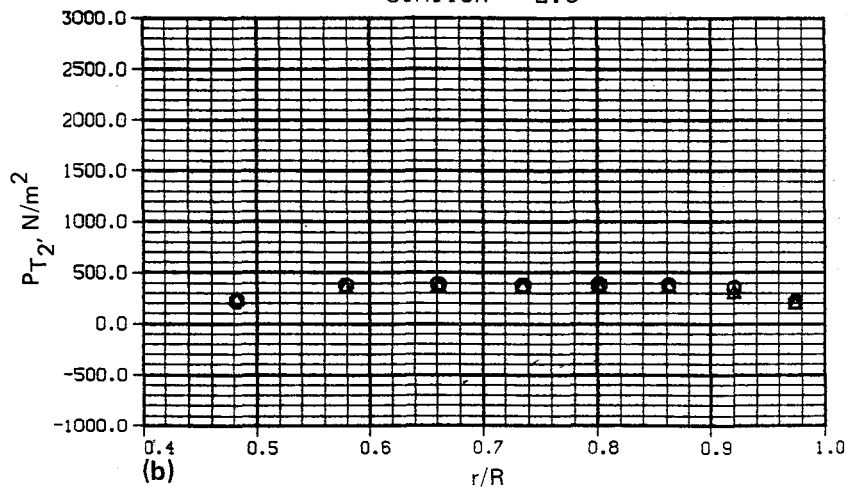
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 110. MASS FLOW: 78.11 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

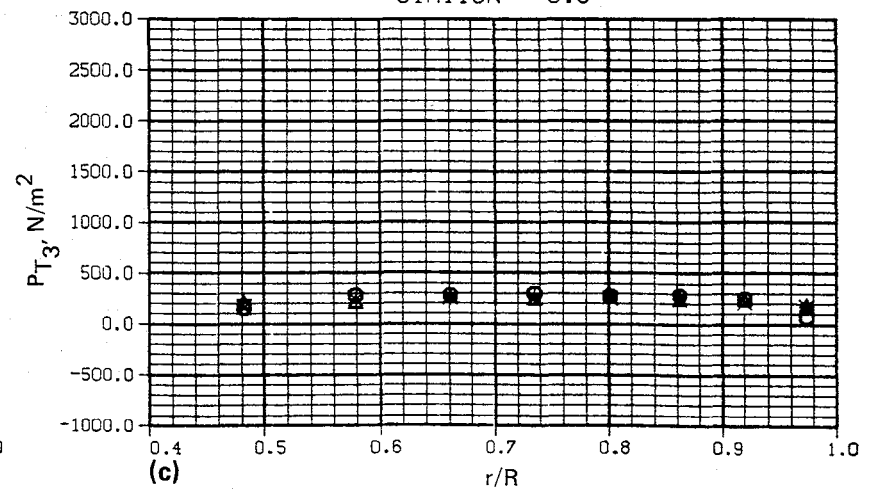
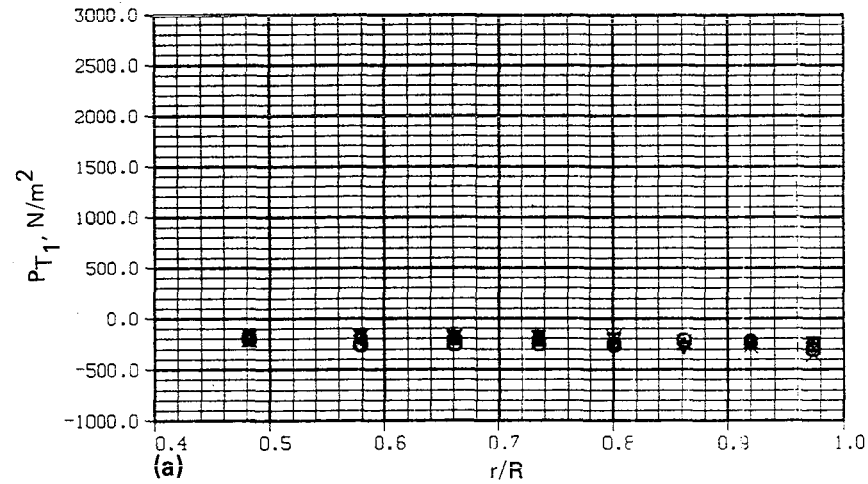
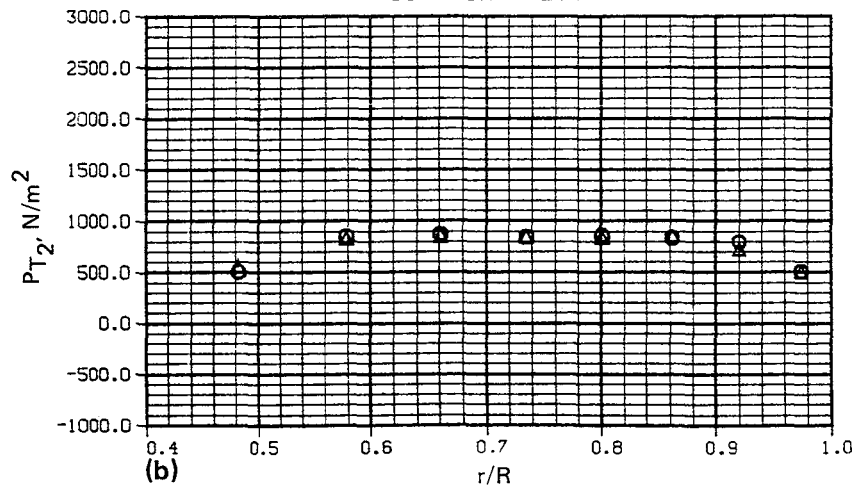


Figure D84.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 48.5
 RUN NO: 111. MASS FLOW: 117.50 slugs/sec
 RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

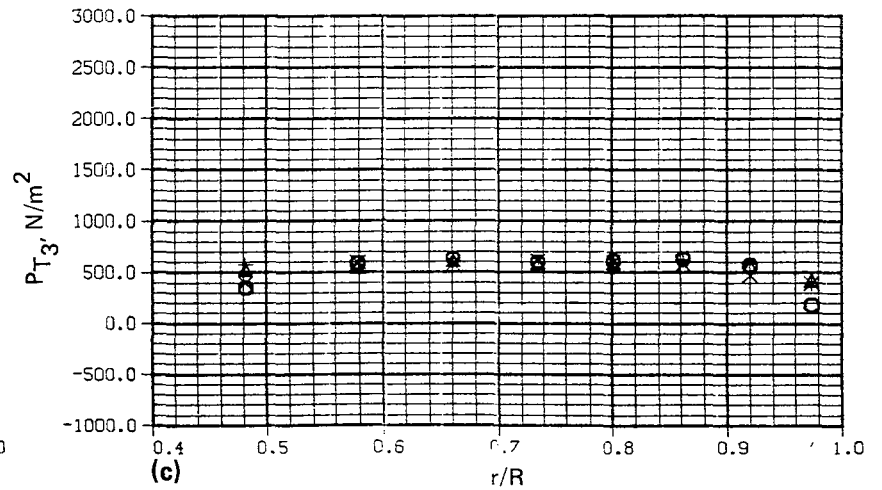


Figure D85.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 112. MASS FLOW: 158.82 slugs/sec

RPM: 960. STATION = 1.0

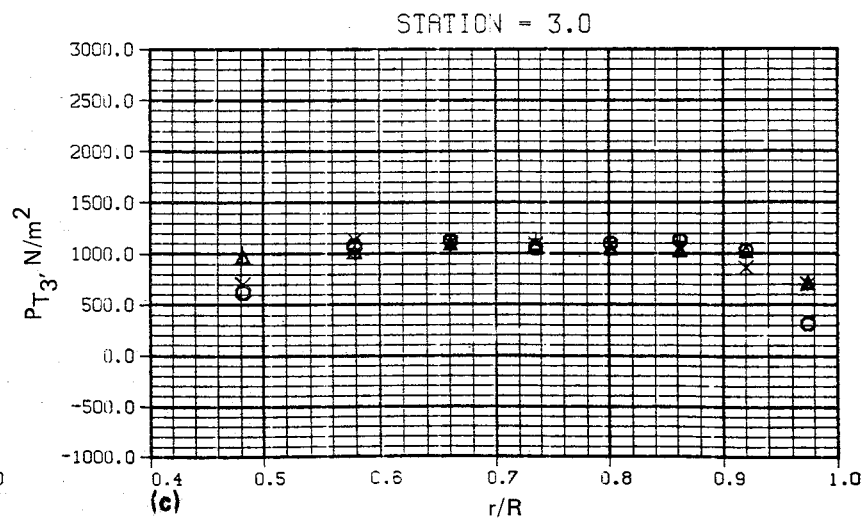
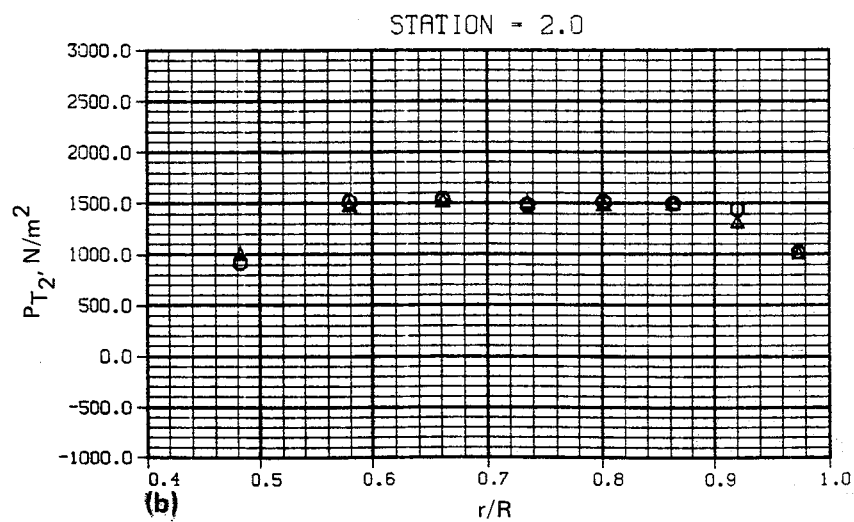
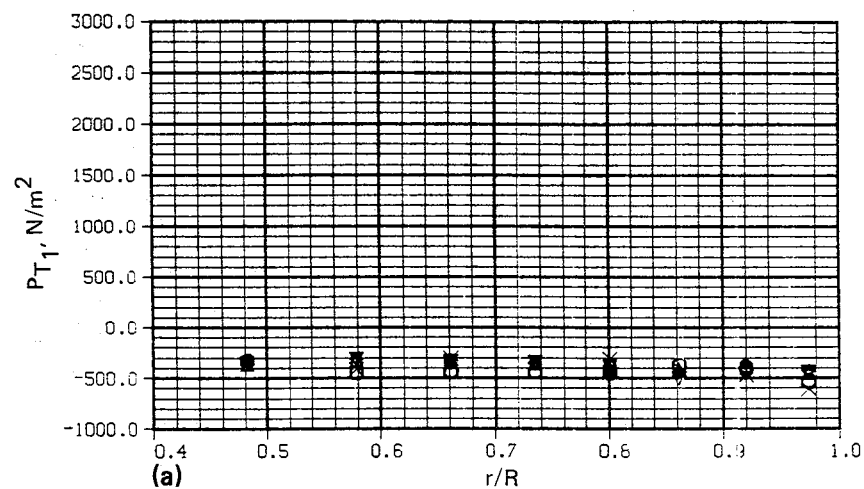
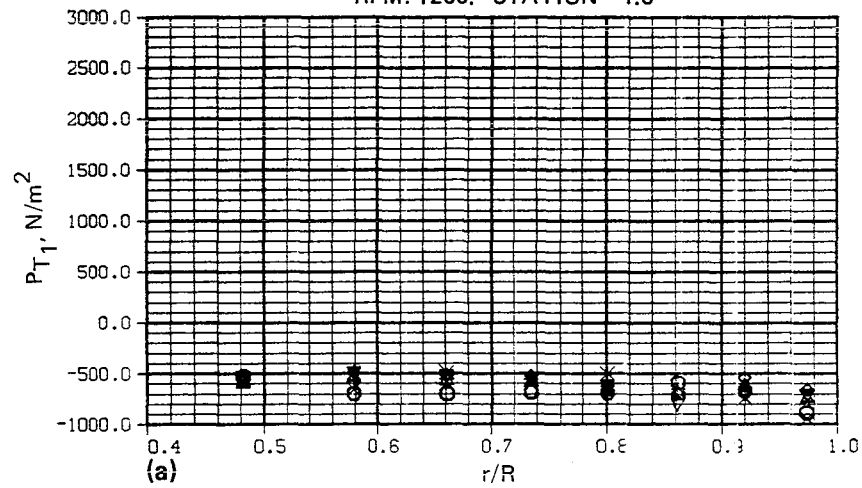
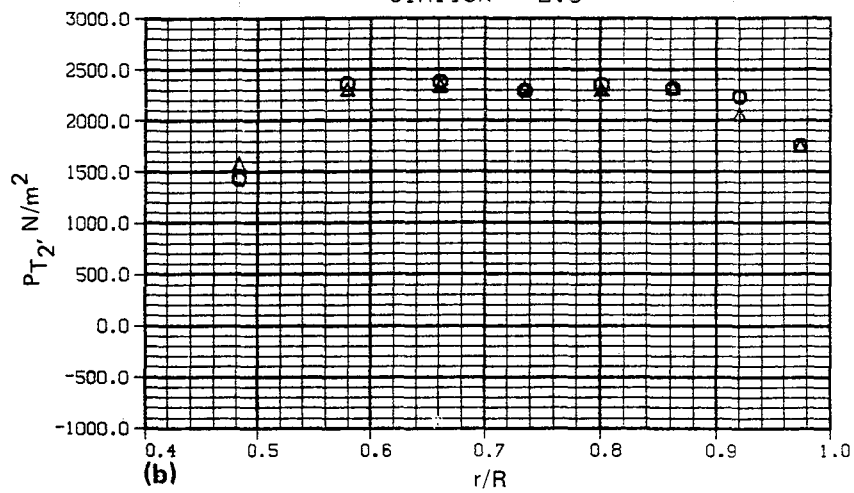


Figure D86.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 48.5
 RUN NO: 113. MASS FLOW: 202.24 slugs/sec
 RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

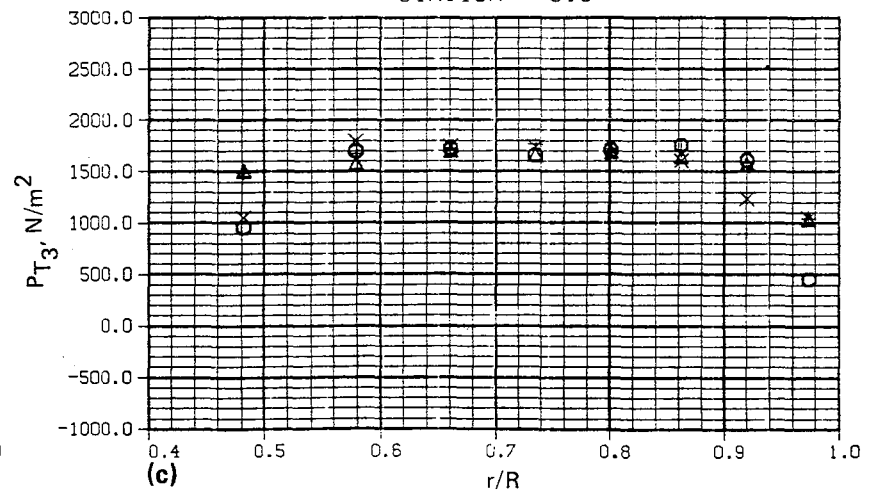


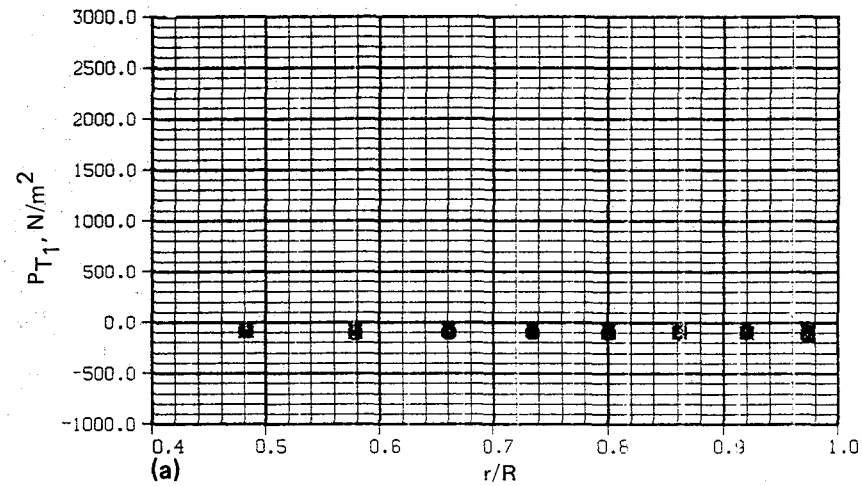
Figure D87.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

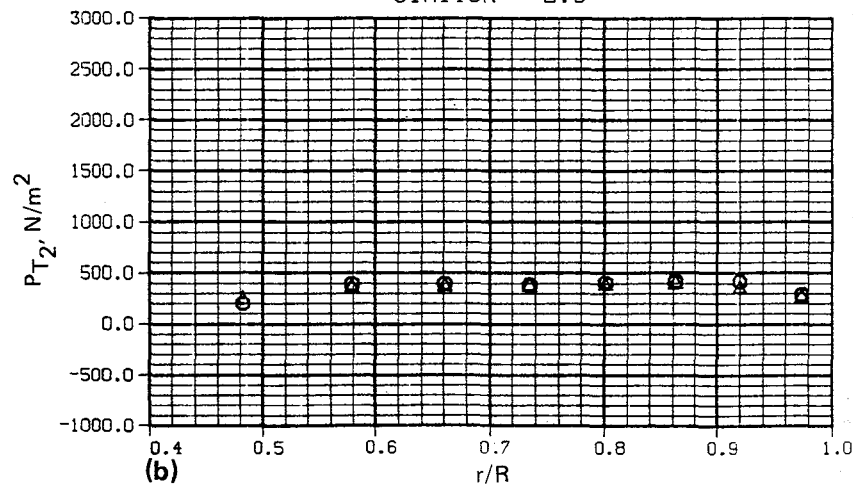
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 114. MASS FLOW: 70.98 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

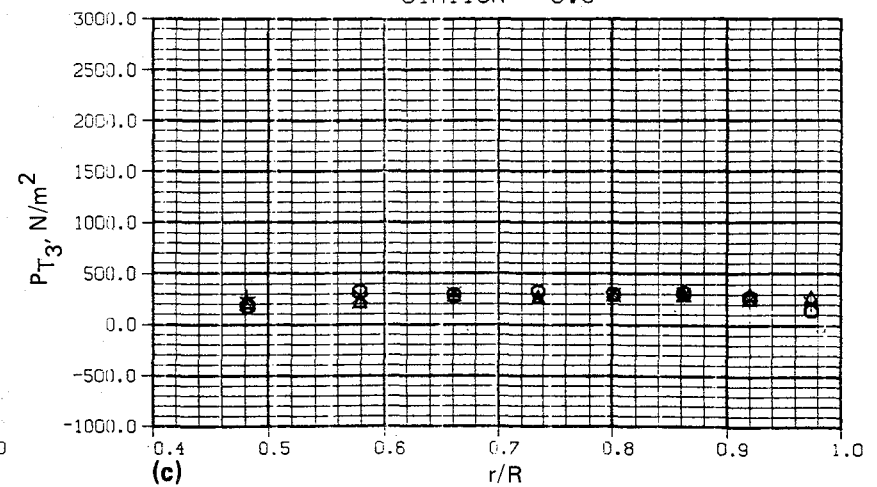


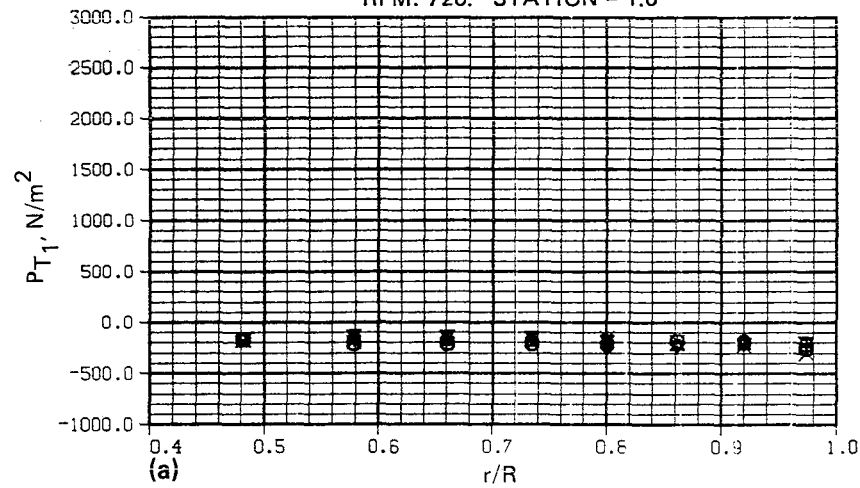
Figure D88.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

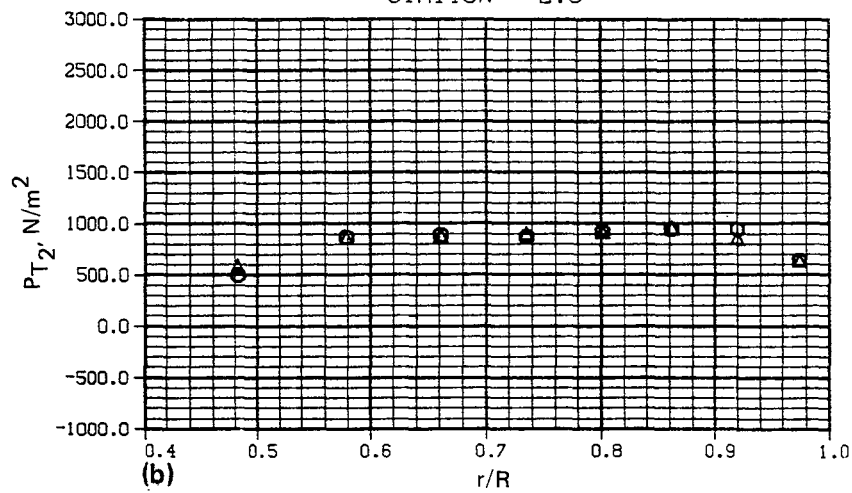
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 115. MASS FLOW: 106.90 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

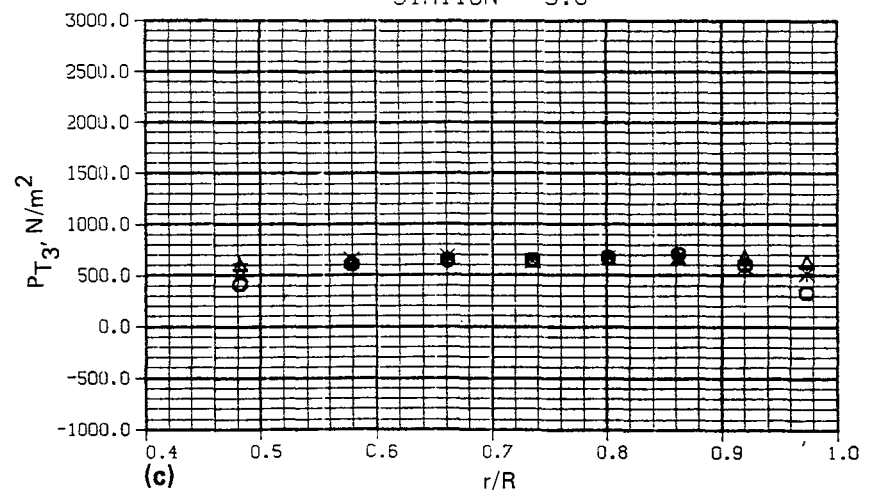


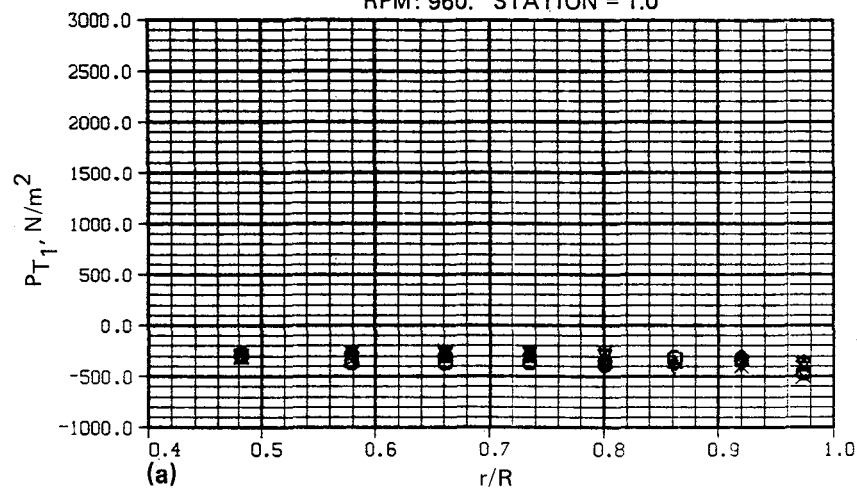
Figure D89.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

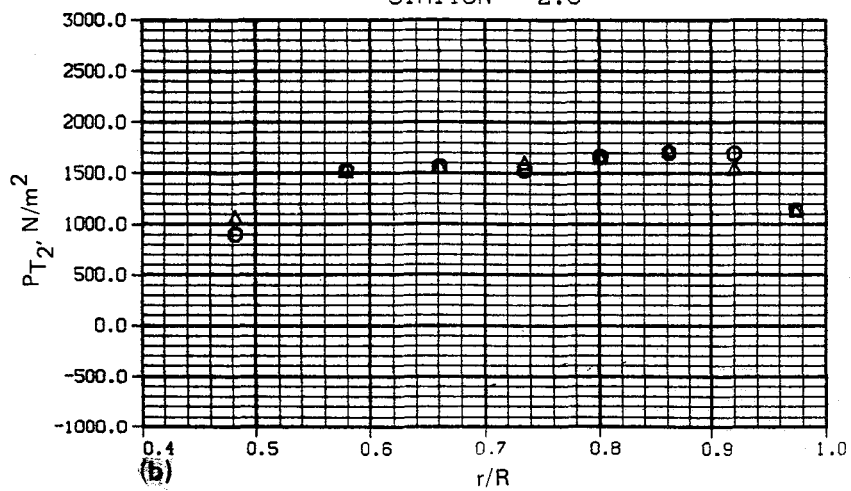
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 116. MASS FLOW: 144.04 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

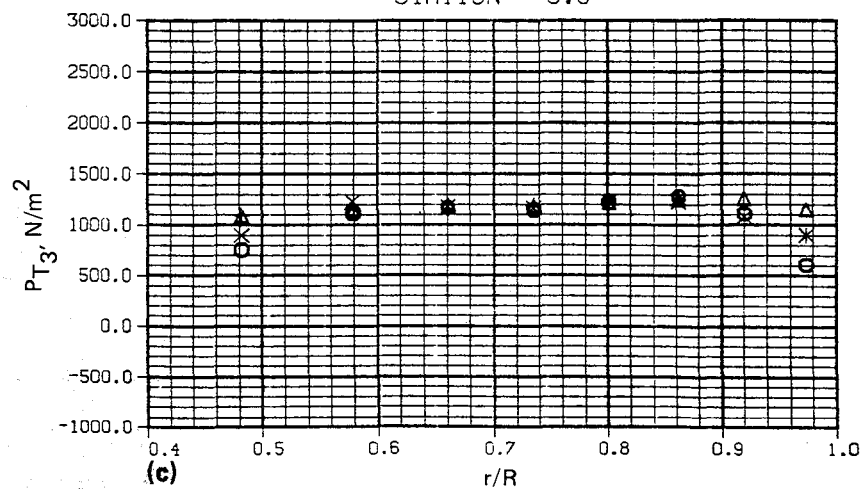


Figure D90.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 117. MASS FLOW: 181.24 slugs/sec

RPM: 1200. STATION = 1.0

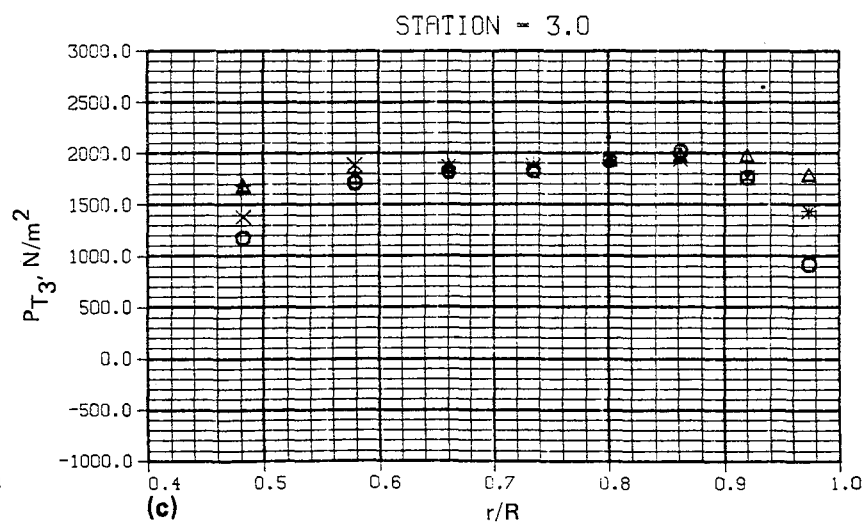
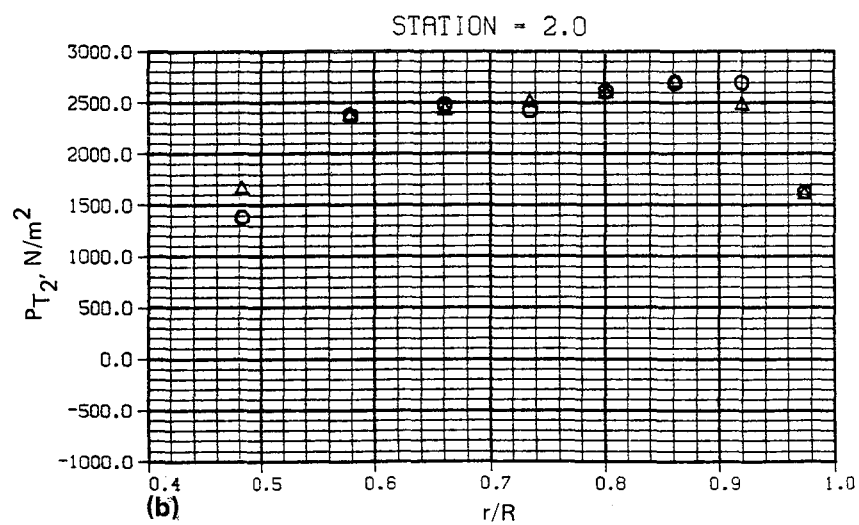
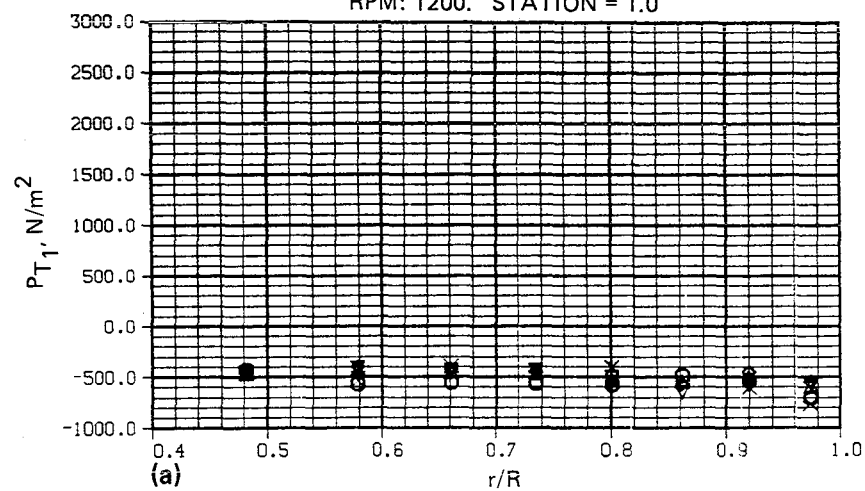


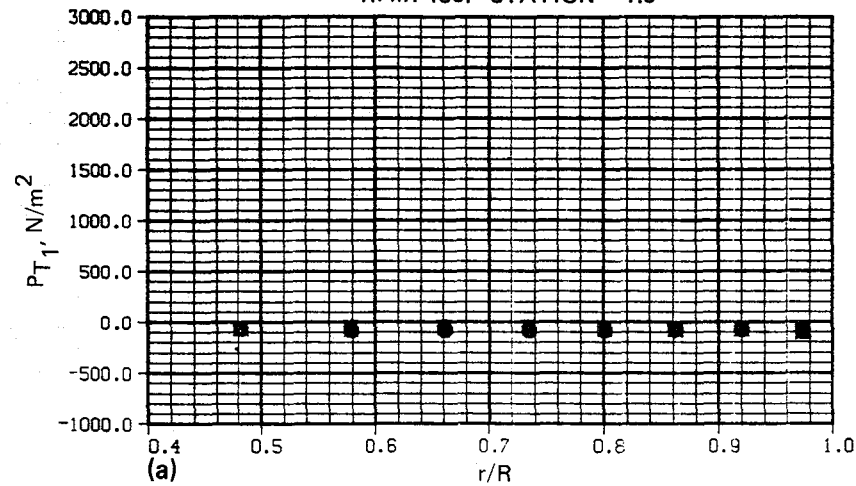
Figure D91.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

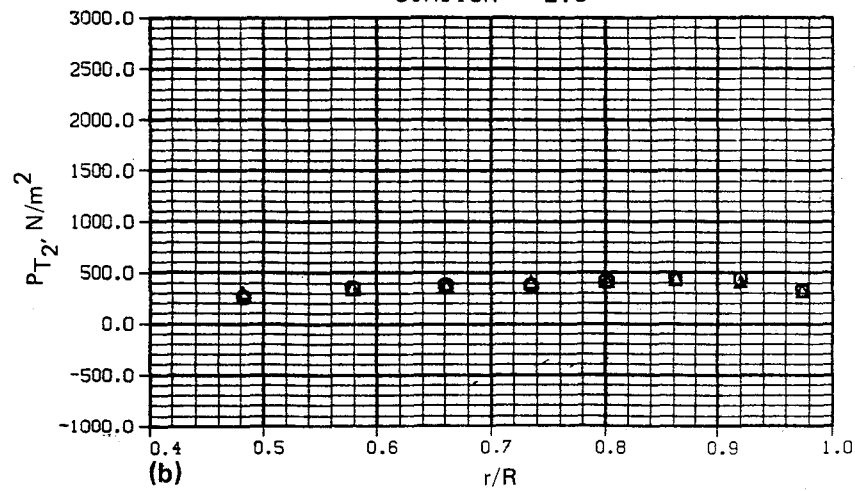
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 118. MASS FLOW: 62.26 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

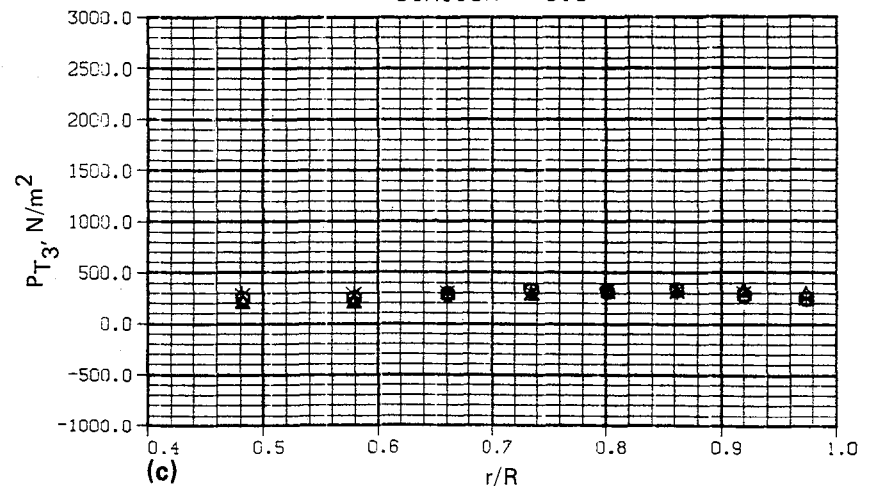


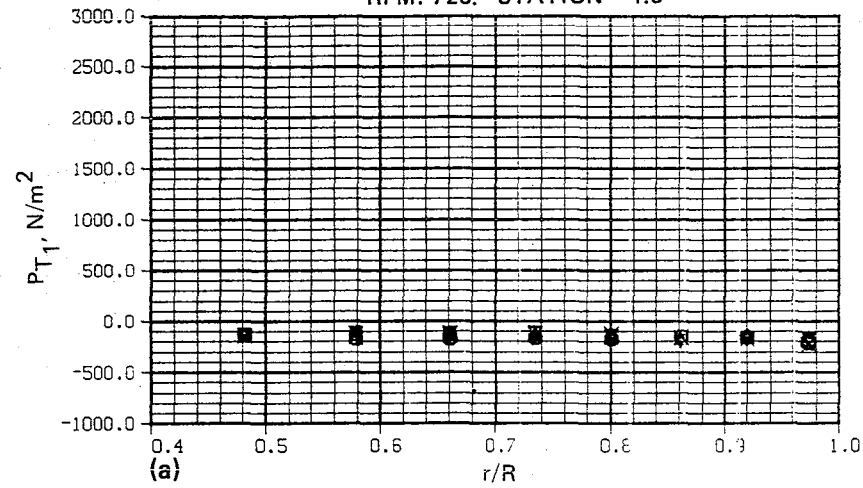
Figure D92.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

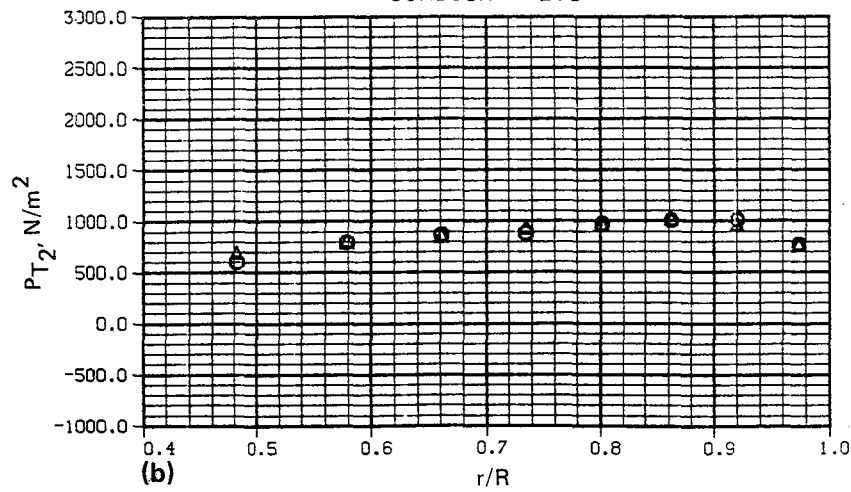
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 119. MASS FLOW: 95.29 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

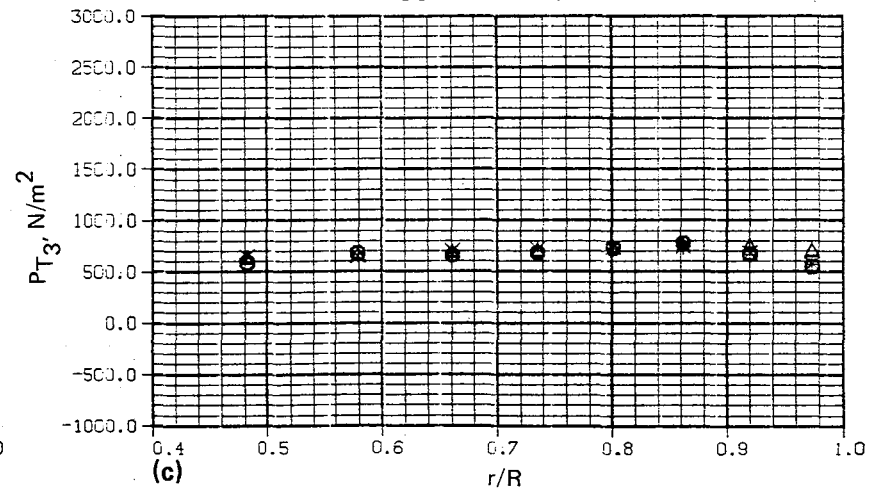


Figure D93.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 48.5
 RUN NO: 120. MASS FLOW: 128.19 slugs/sec
 RPM: 960. STATION = 1.0

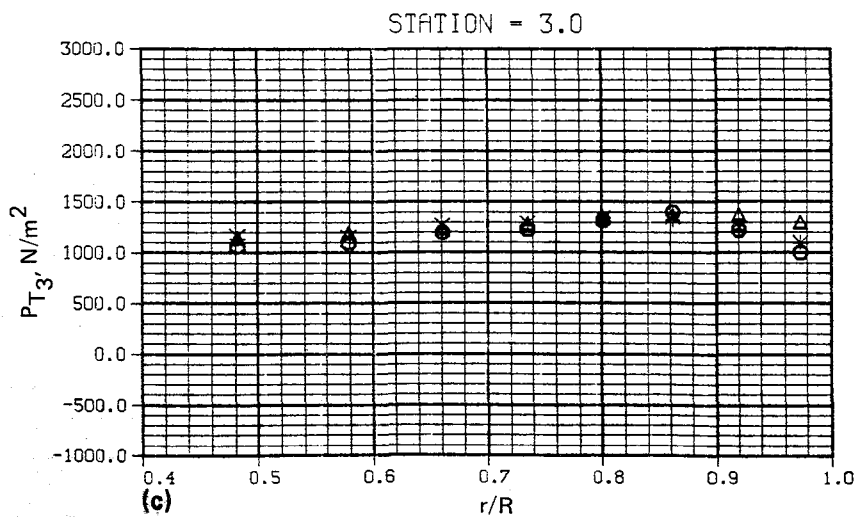
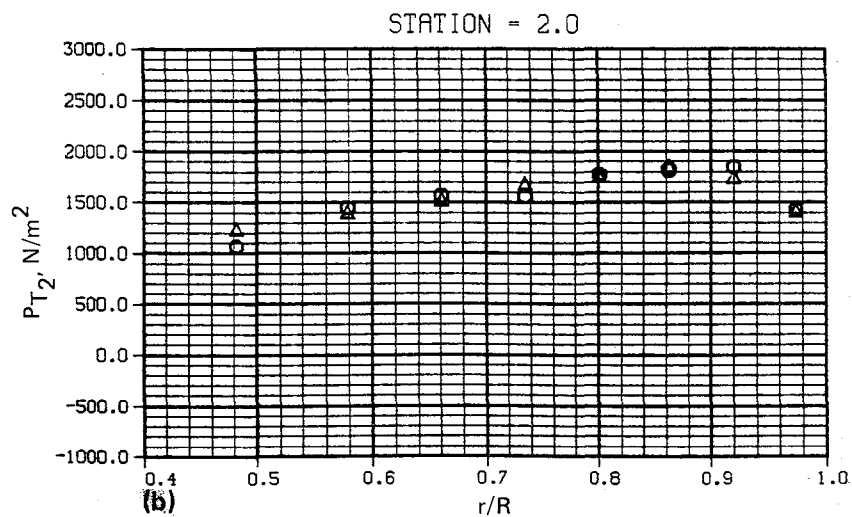
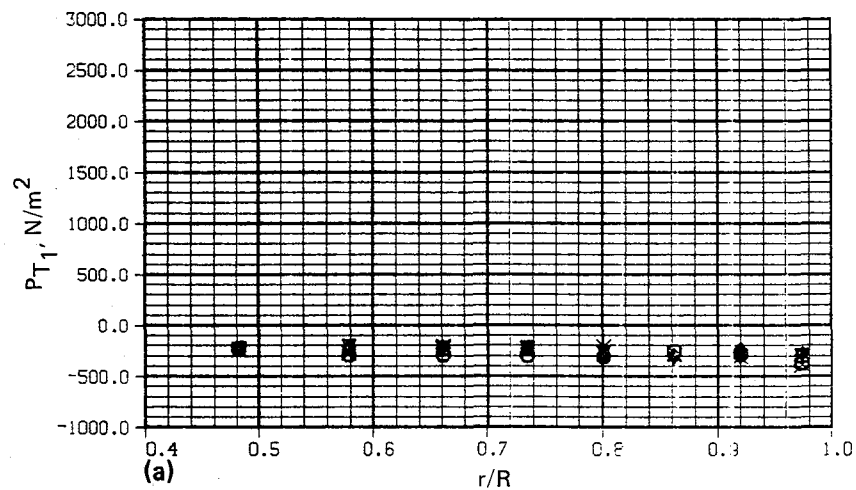


Figure D94.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 121. MASS FLOW: 162.99 slugs/sec

RPM: 1200. STATION = 1.0

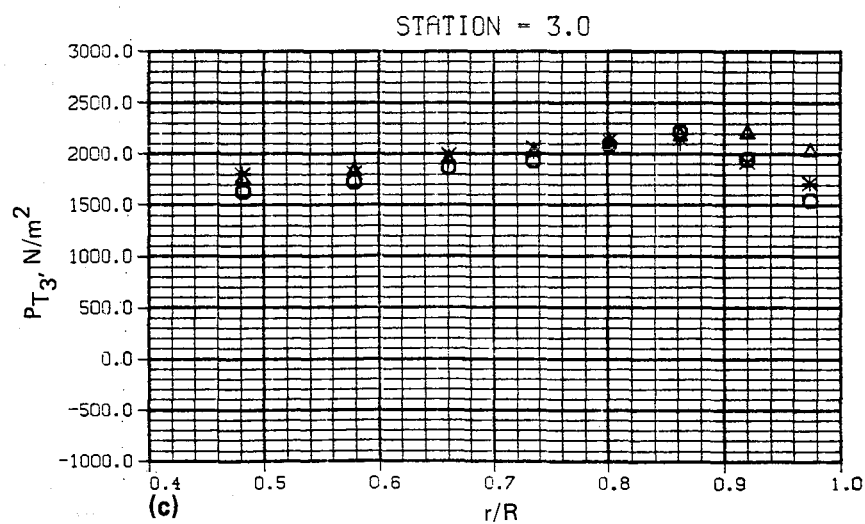
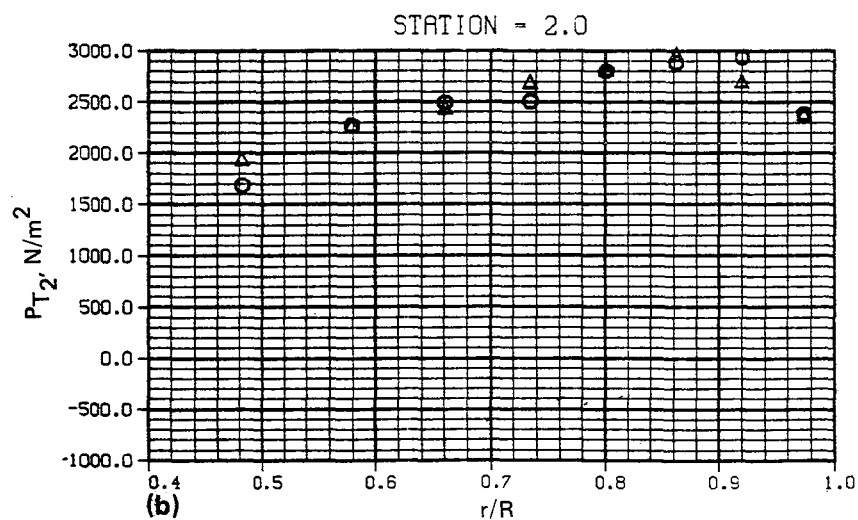
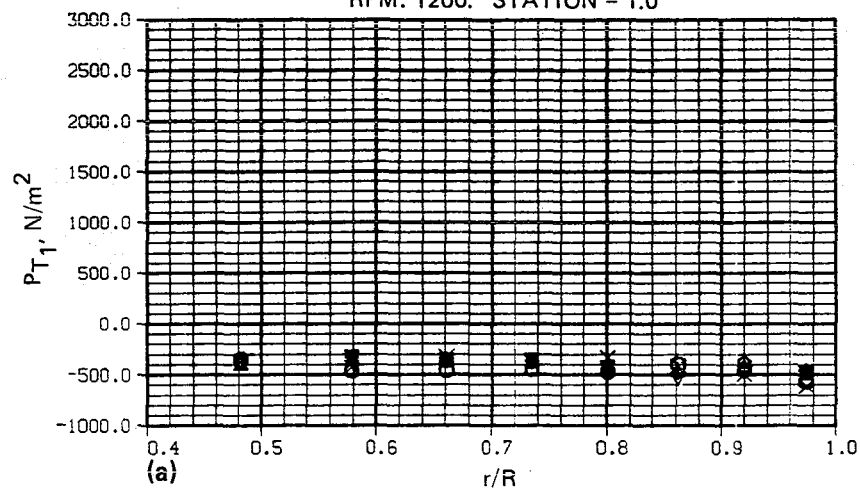


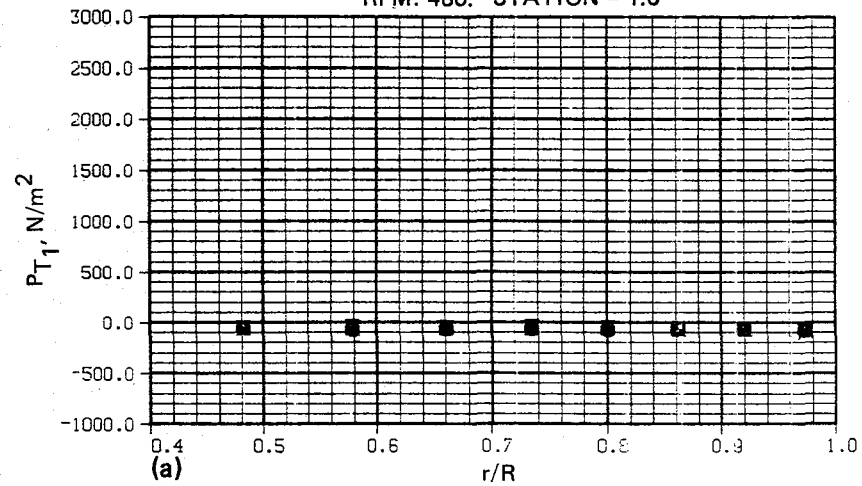
Figure D95.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

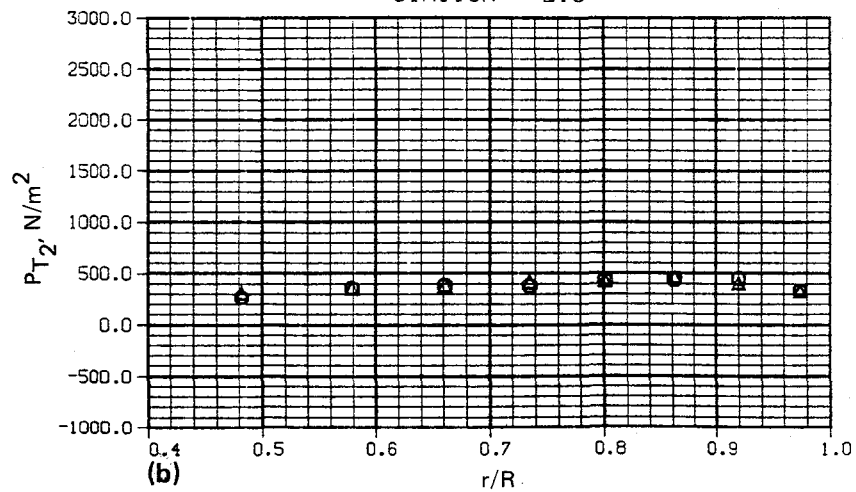
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 122. MASS FLOW: 57.81 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

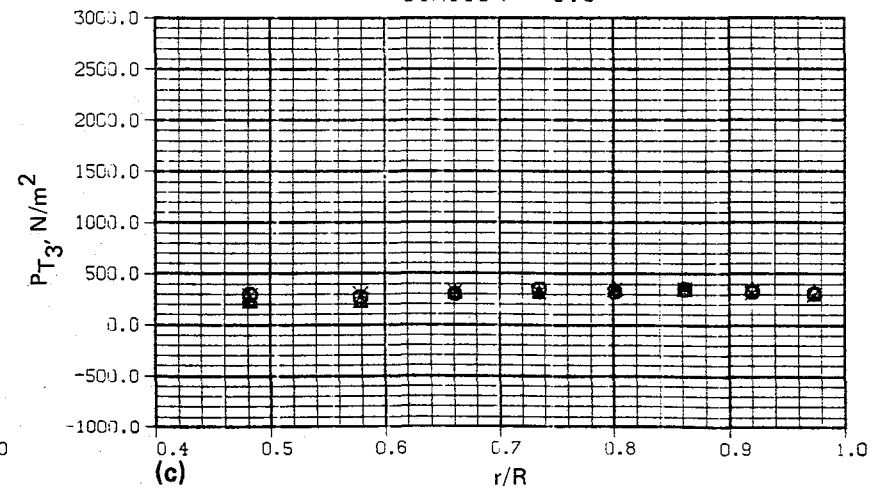


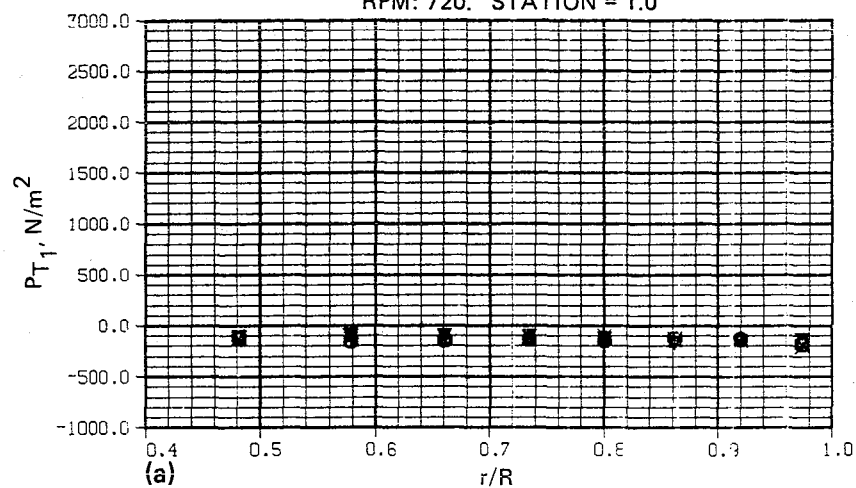
Figure D96.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

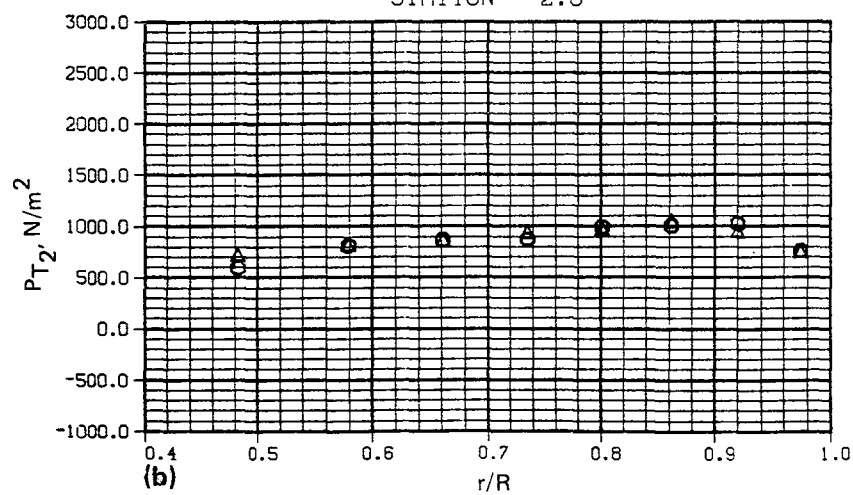
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 123. MASS FLOW: 87.68 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

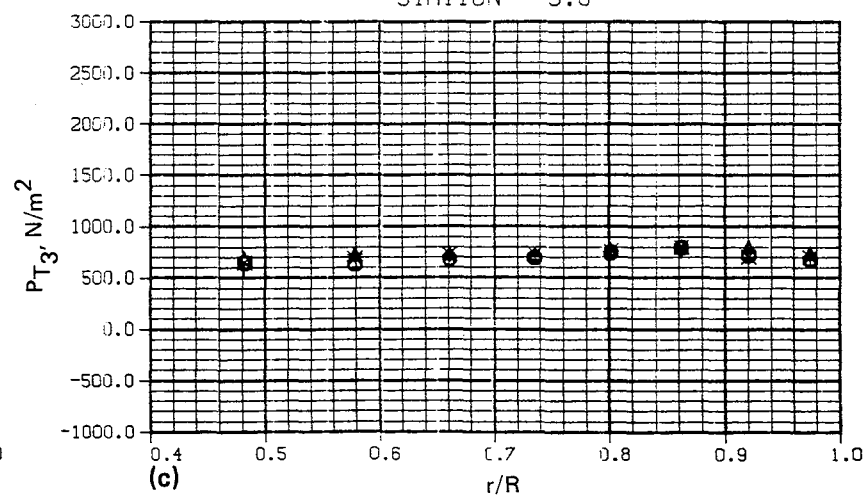


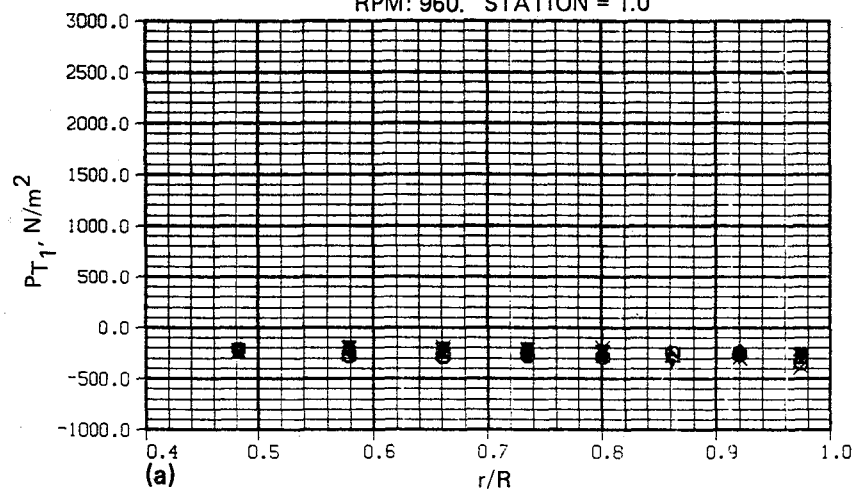
Figure D97.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

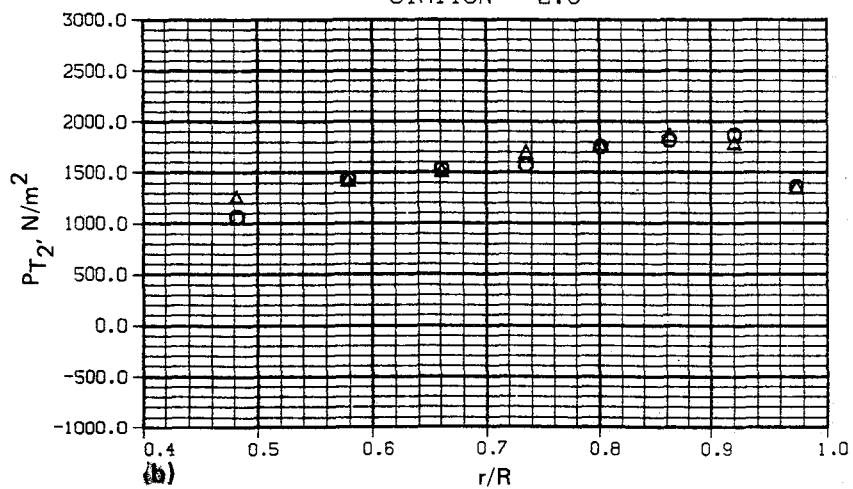
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 124. MASS FLOW: 124.45 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

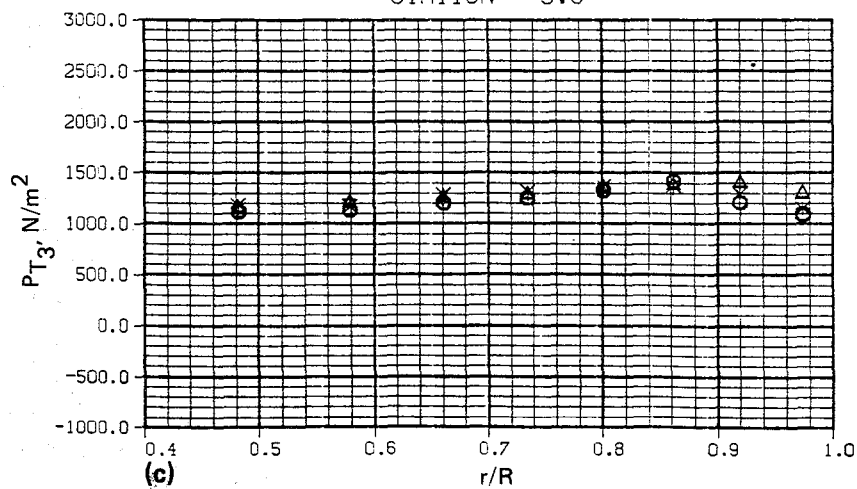


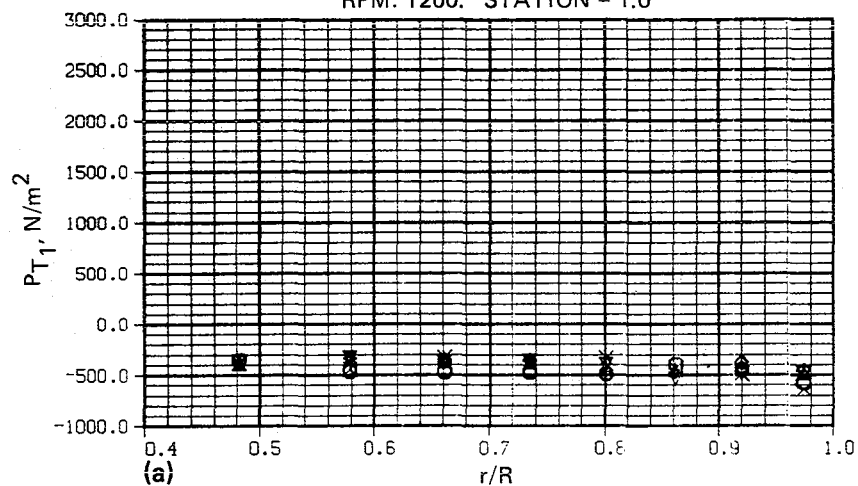
Figure D98.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

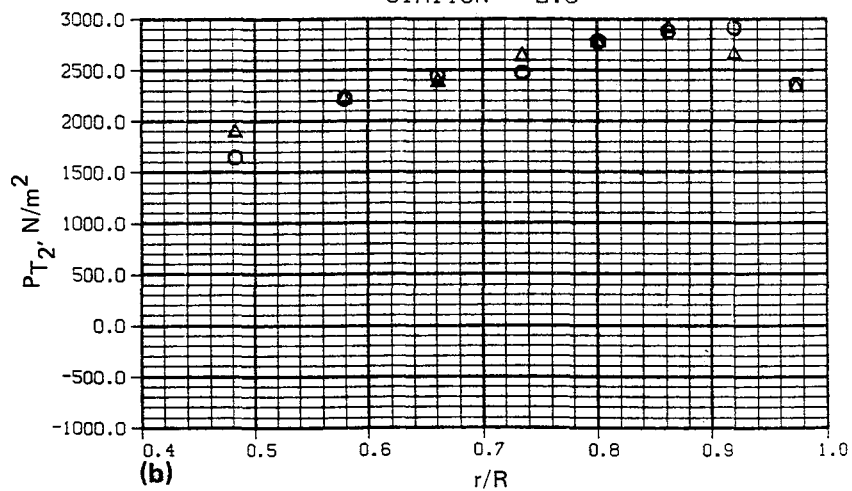
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 125. MASS FLOW: 163.53 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

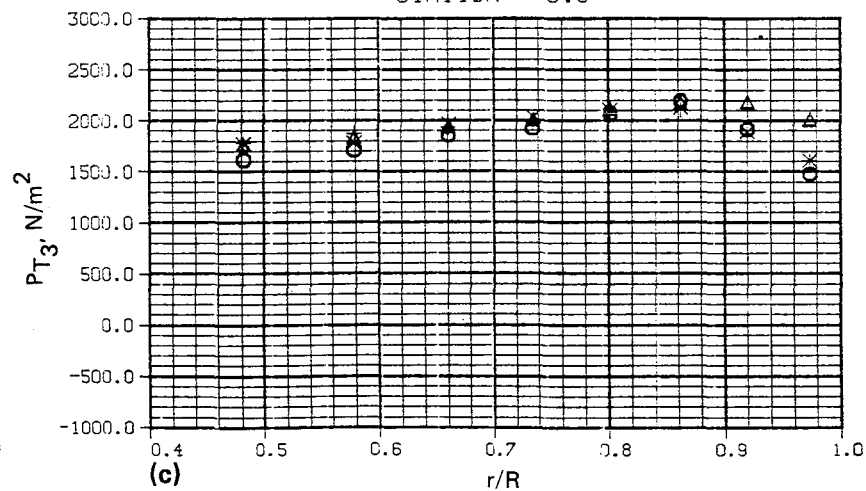


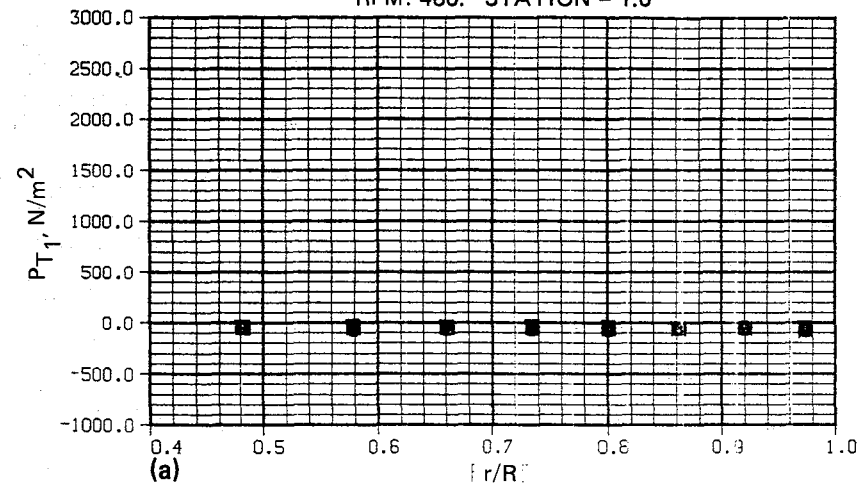
Figure D99.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

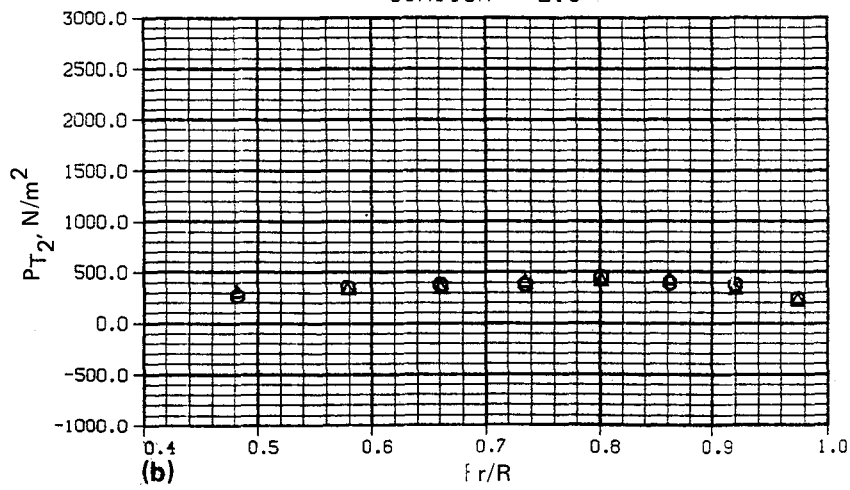
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 126. MASS FLOW: 52.48 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

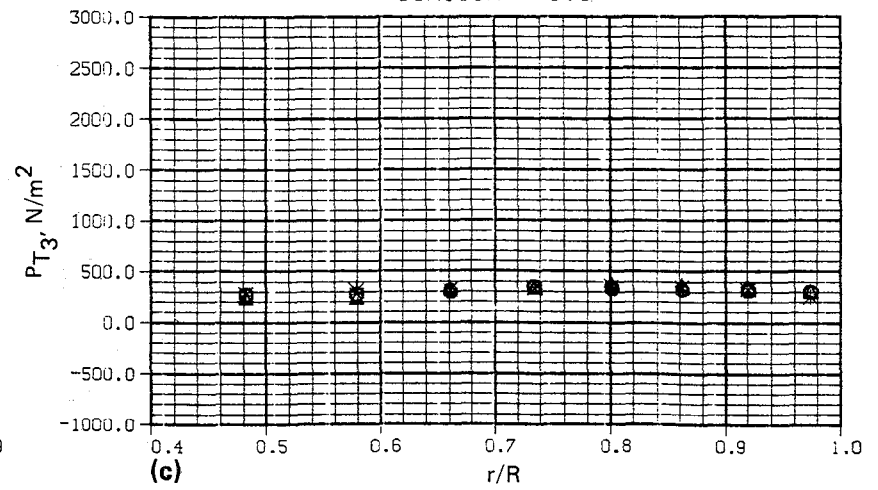


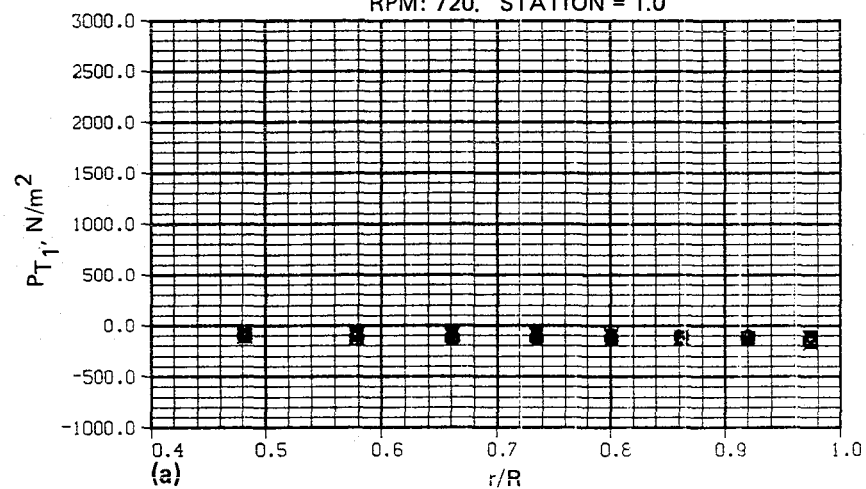
Figure D100.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

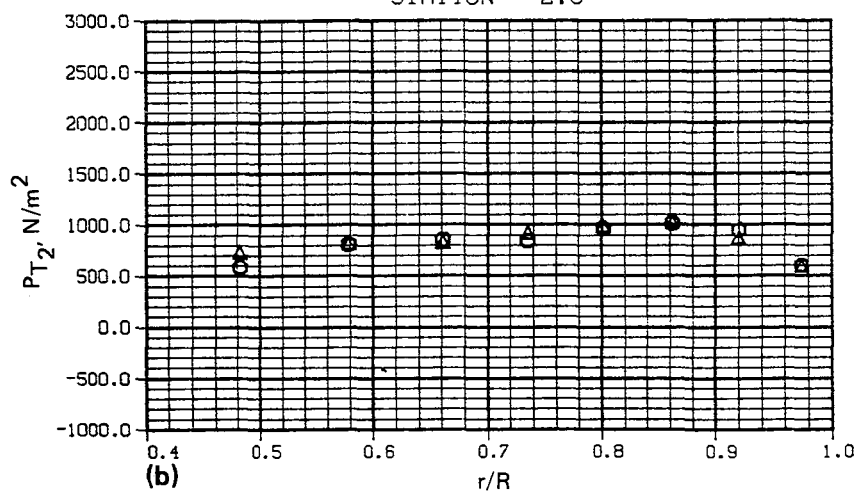
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 127. MASS FLOW: 80.49 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

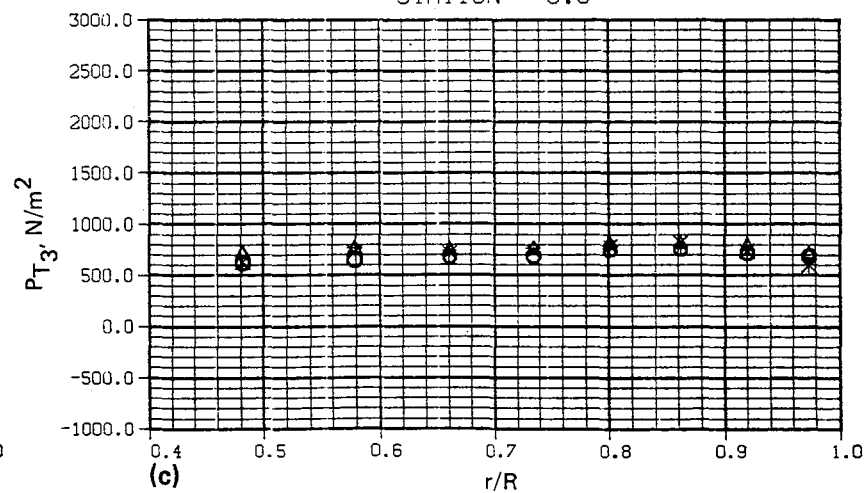


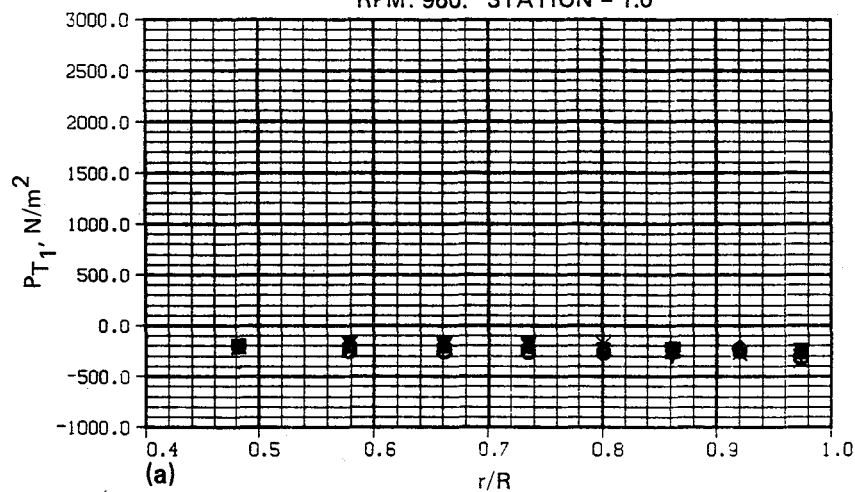
Figure D101.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

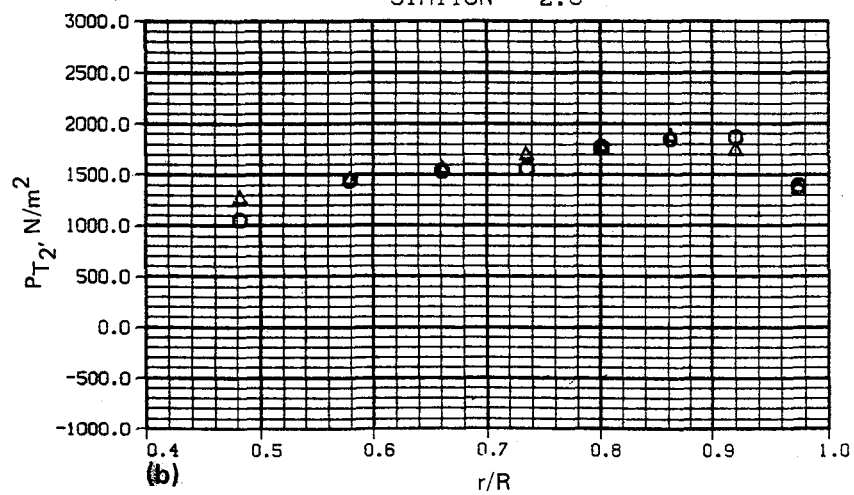
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 128. MASS FLOW: 118.87 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

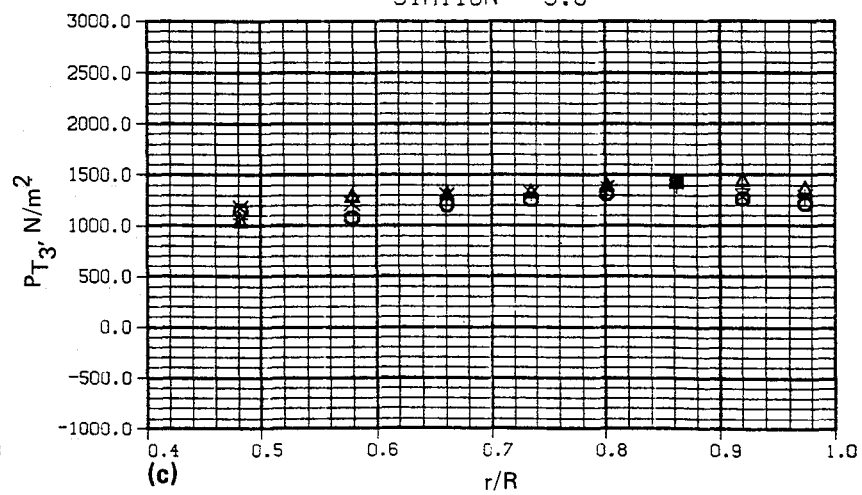


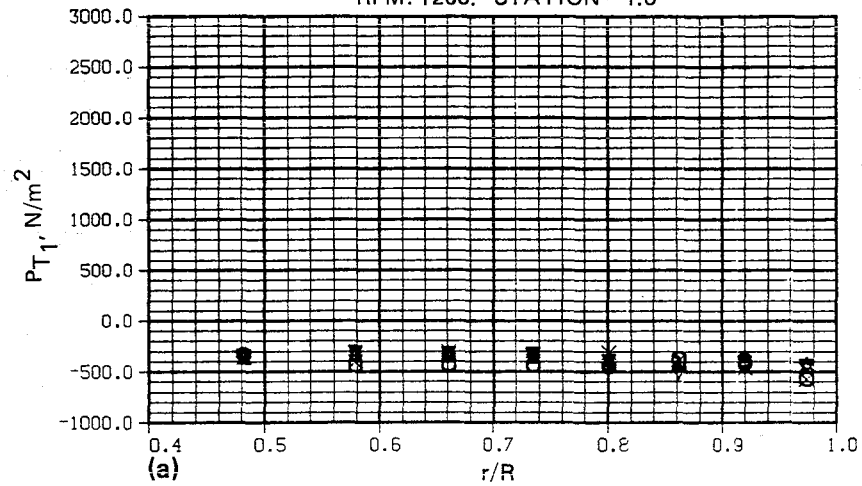
Figure D102.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

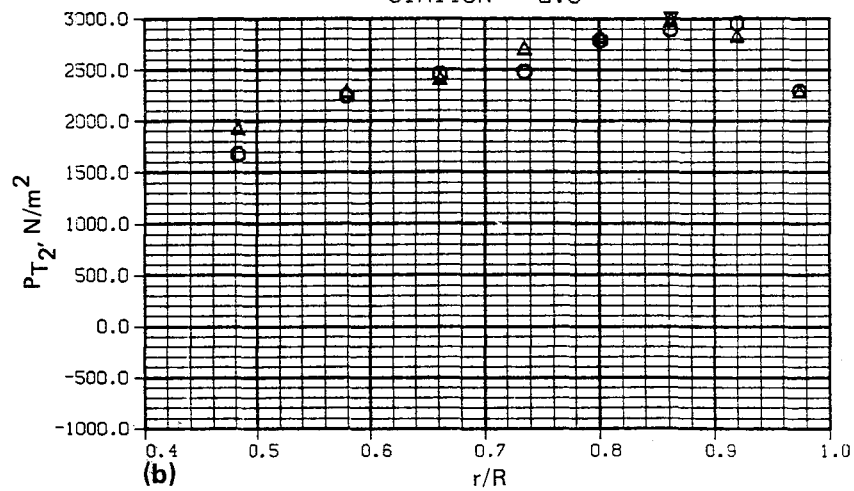
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 129. MASS FLOW: 157.51 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

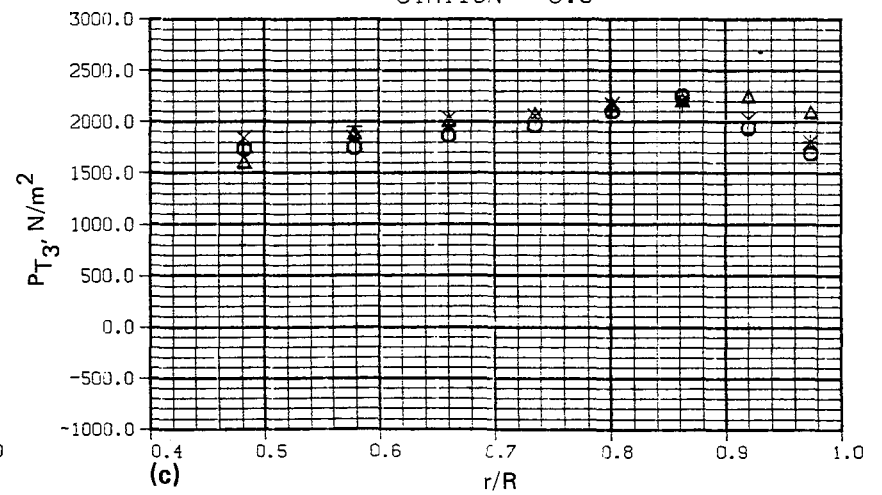


Figure D103.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 130. MASS FLOW: 41.41 slugs/sec

RPM: 480. STATION = 1.0

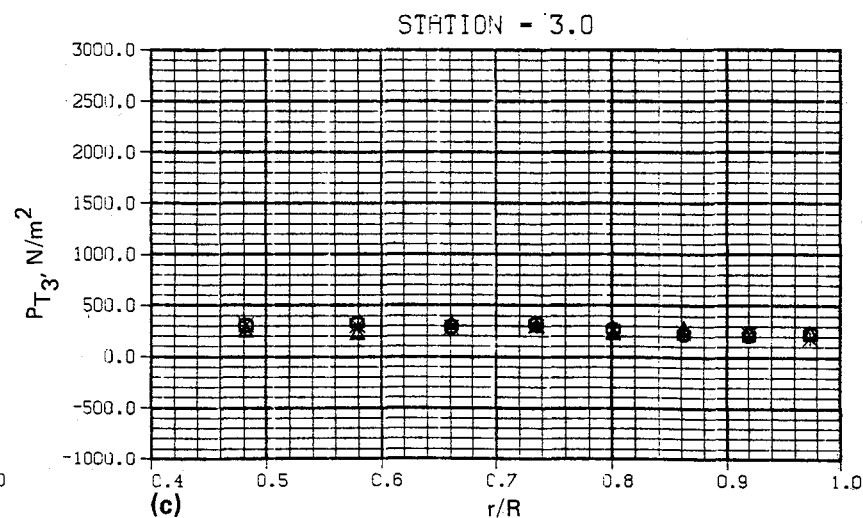
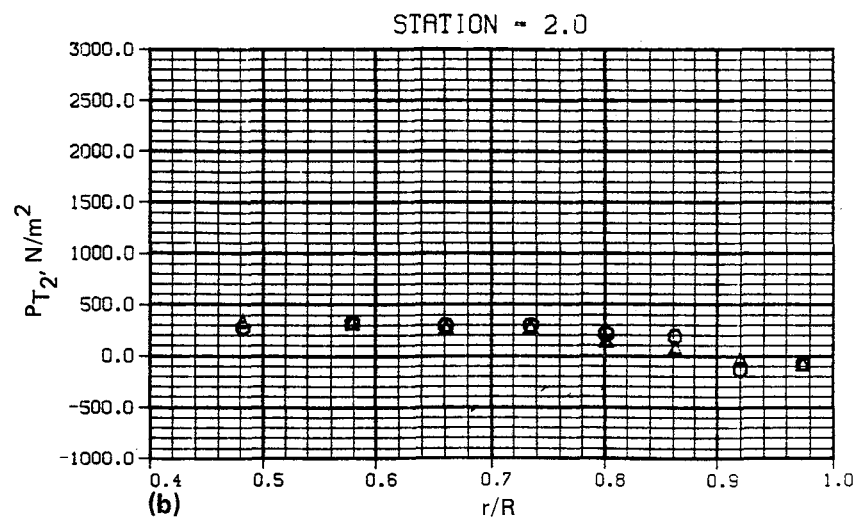
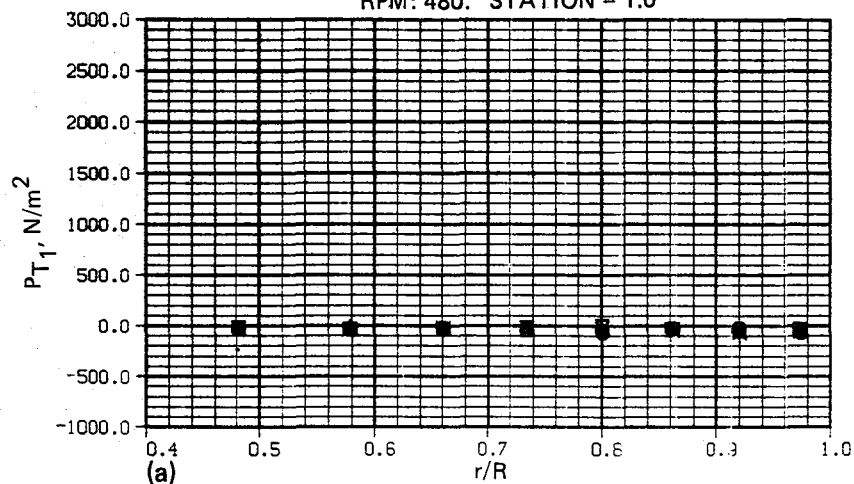
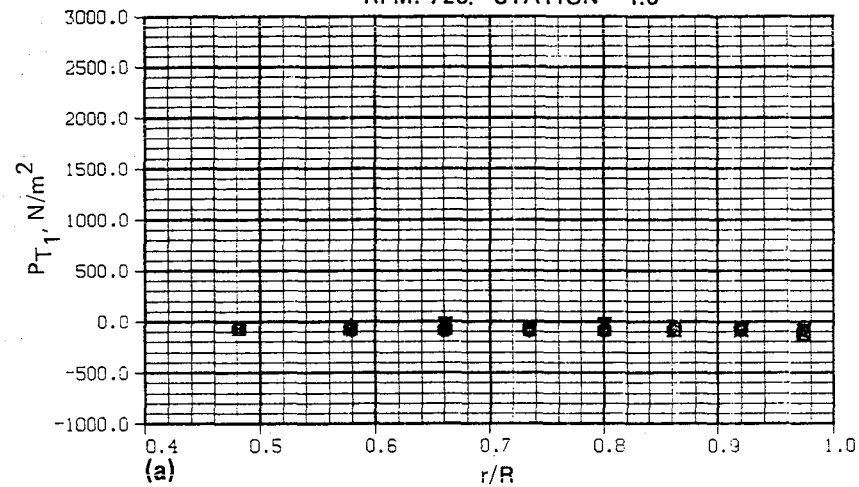
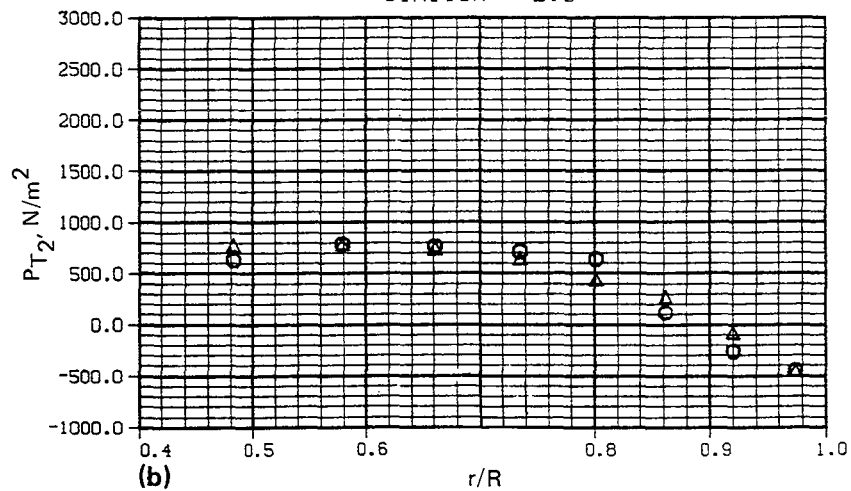


Figure D104.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 1. BLADE ANGLE: 48.5
 RUN NO: 131. MASS FLOW: 63.97 slugs/sec
 RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

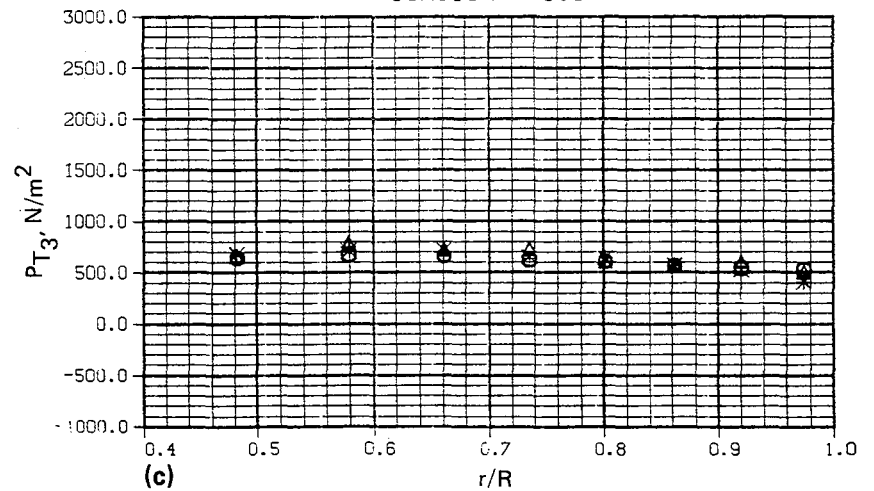


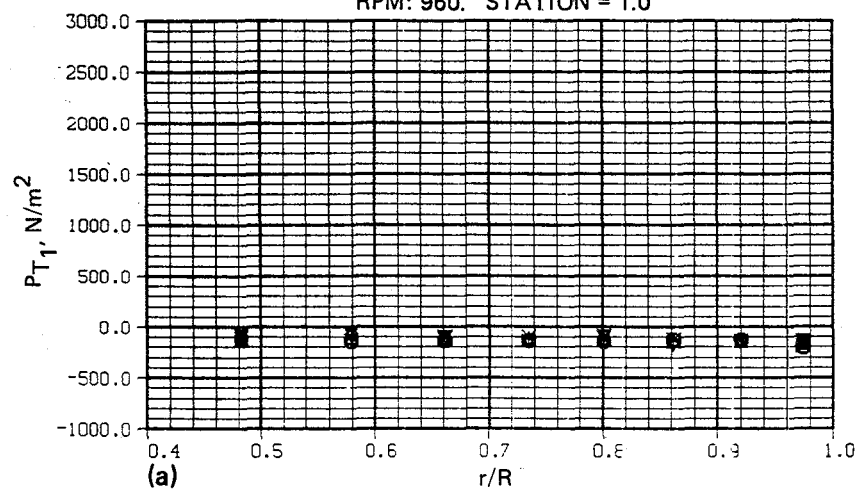
Figure D105.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

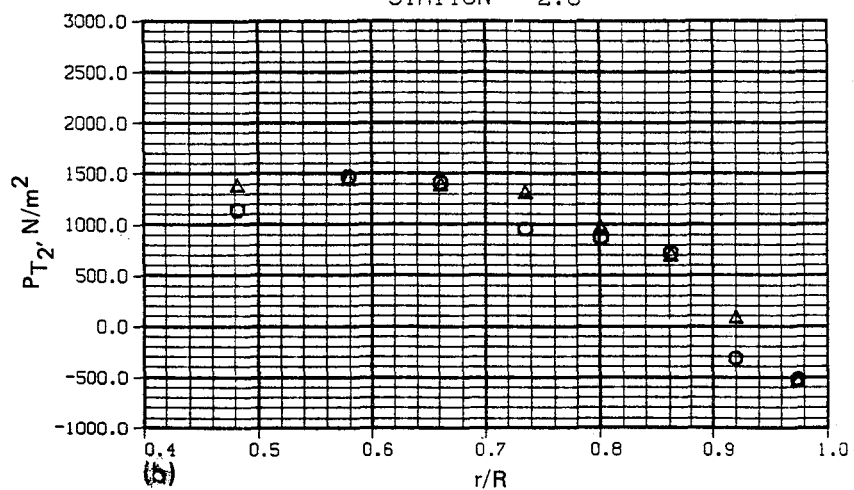
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 132. MASS FLOW: 86.06 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

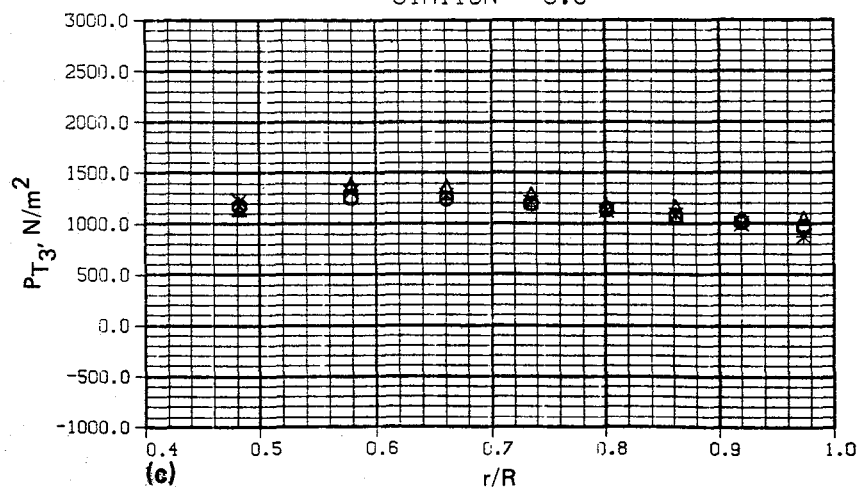


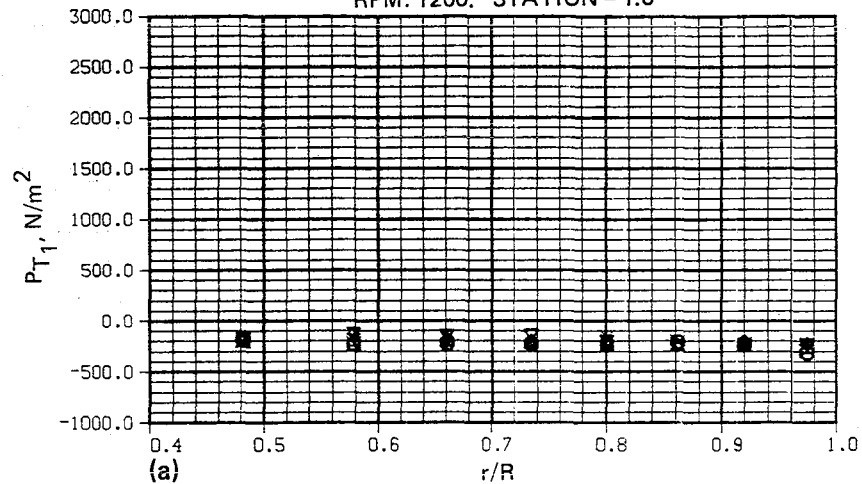
Figure D106.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

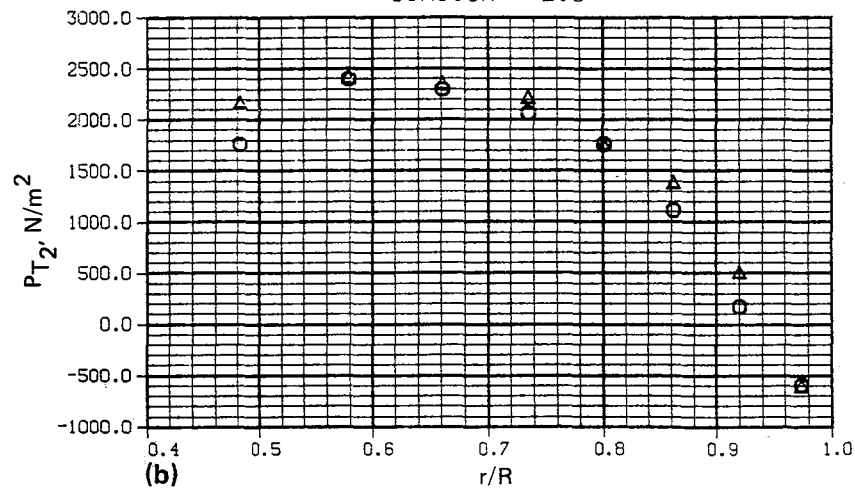
BLADE TYPE: 1. BLADE ANGLE: 48.5

RUN NO: 133. MASS FLOW: 111.81 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

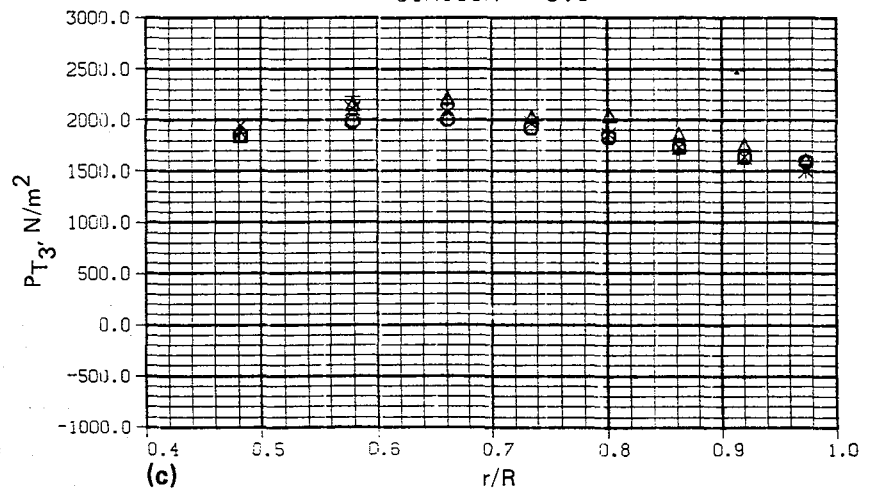


Figure D107.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 138. MASS FLOW: 73.92 slugs/sec

RPM: 480. STATION = 1.0

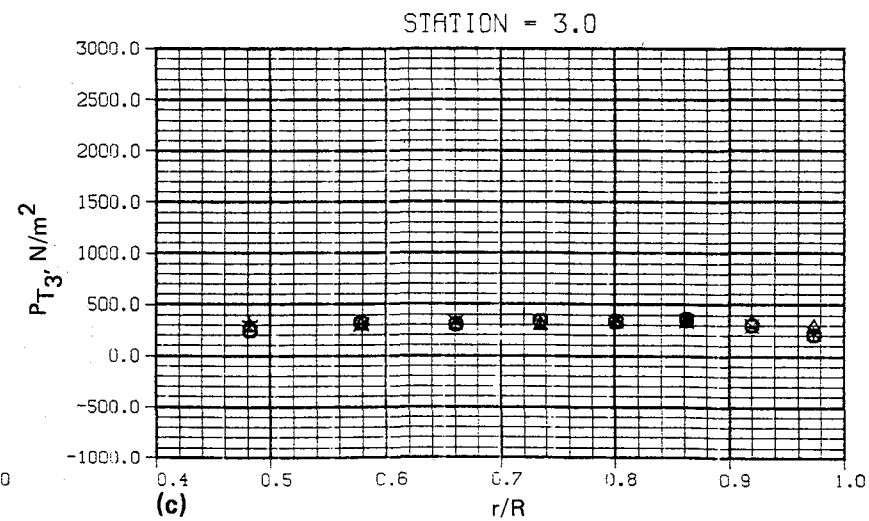
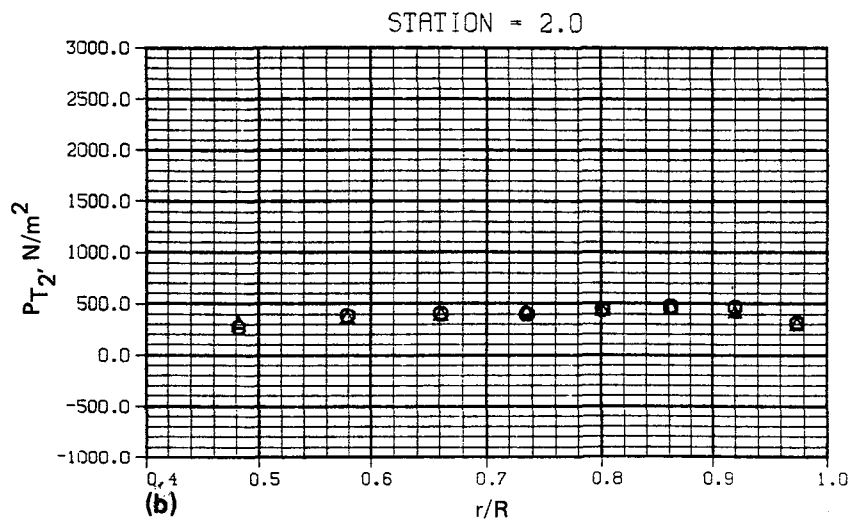
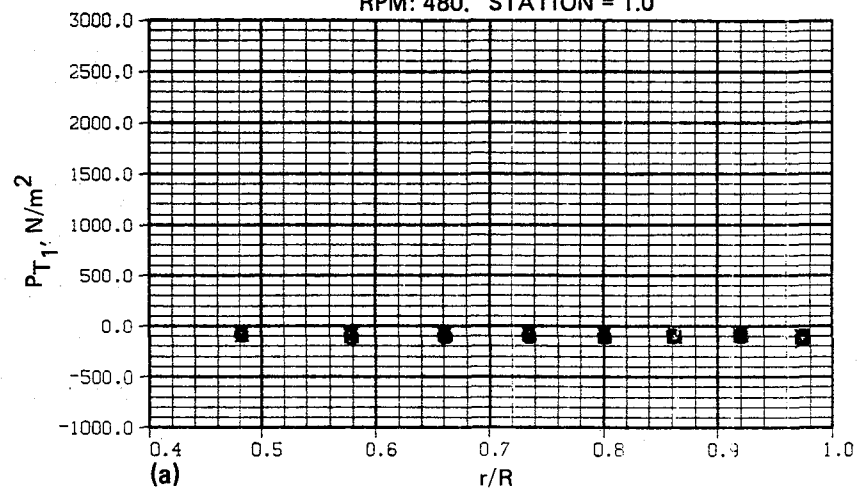


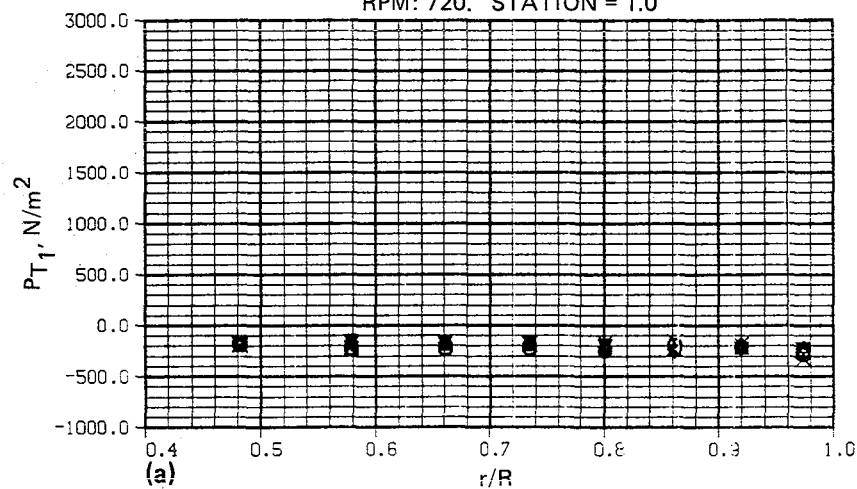
Figure D108.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

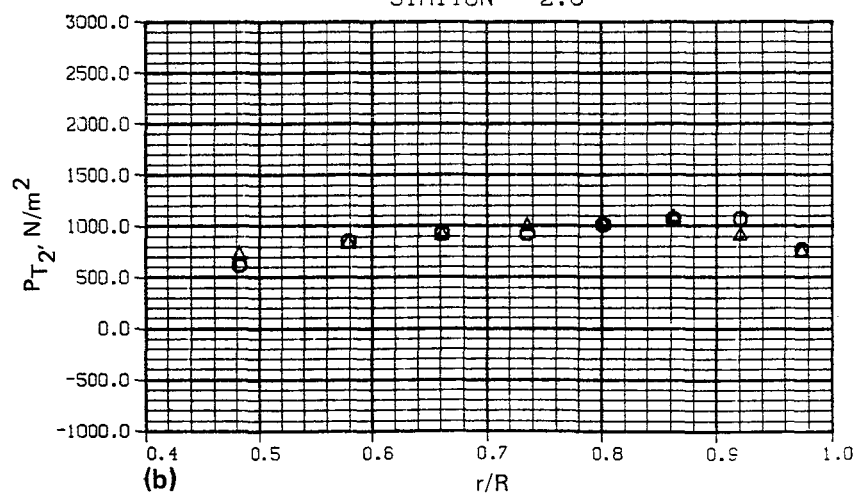
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 139. MASS FLOW: 112.77 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

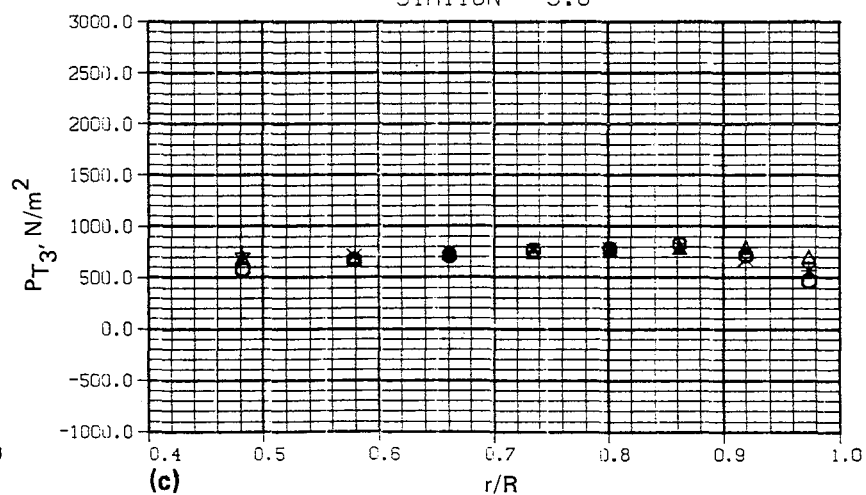


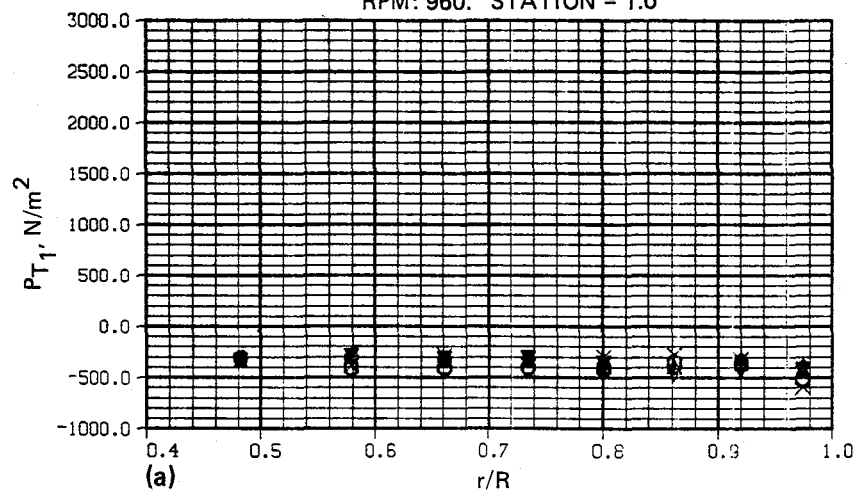
Figure D109.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

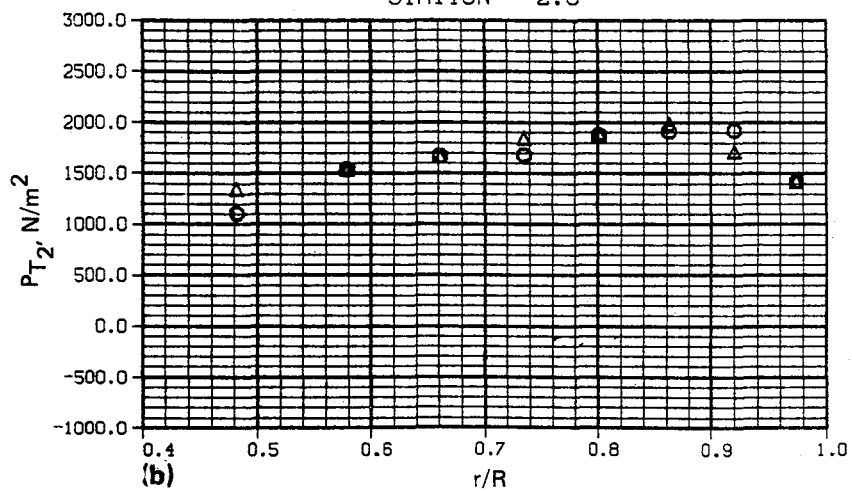
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 140. MASS FLOW: 152.07 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

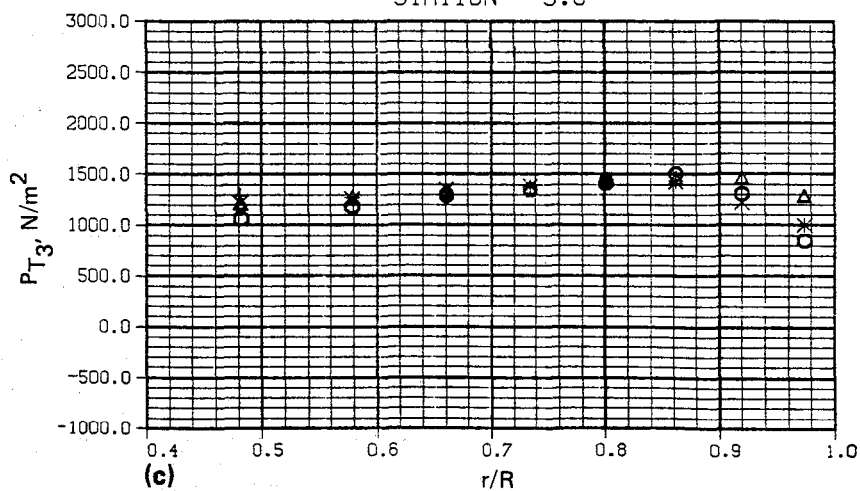


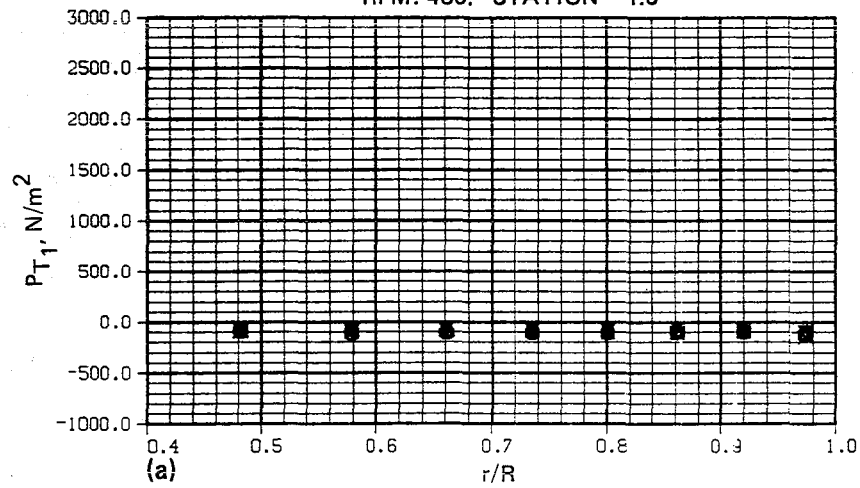
Figure D110.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

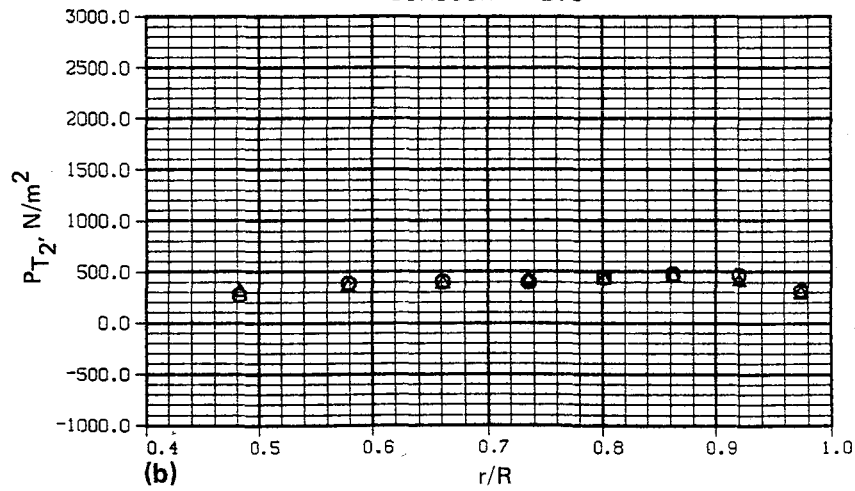
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 142. MASS FLOW: 73.92 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

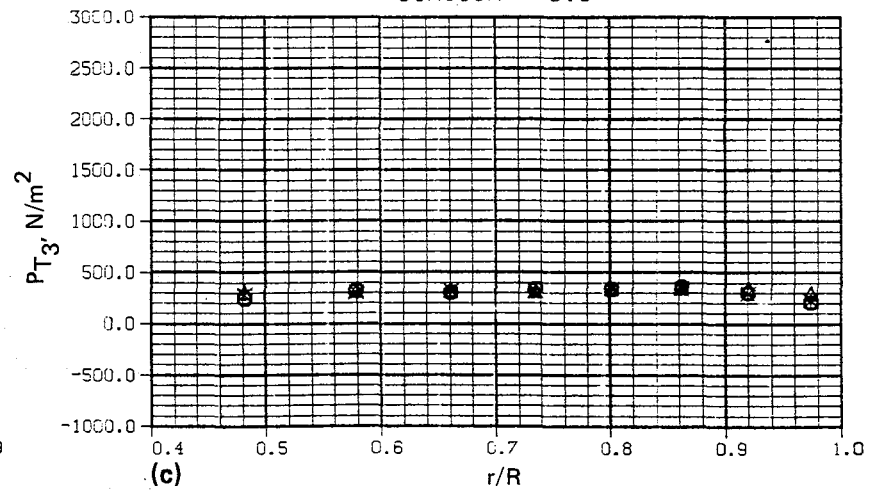


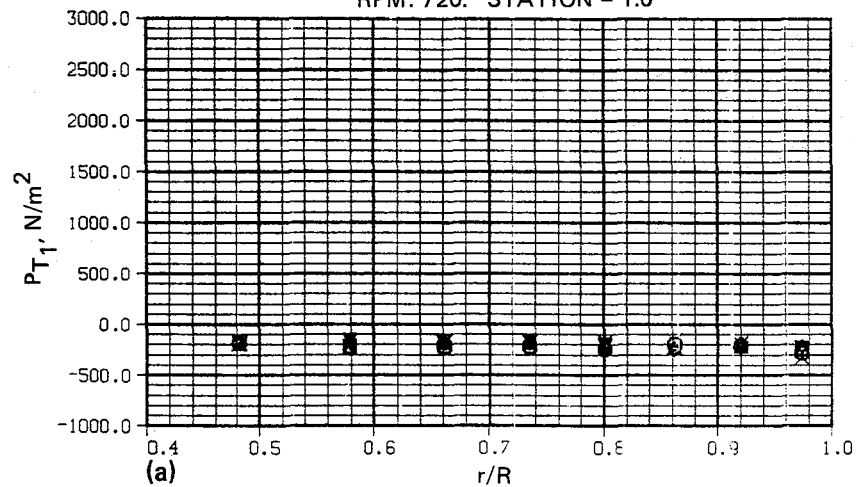
Figure D111.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

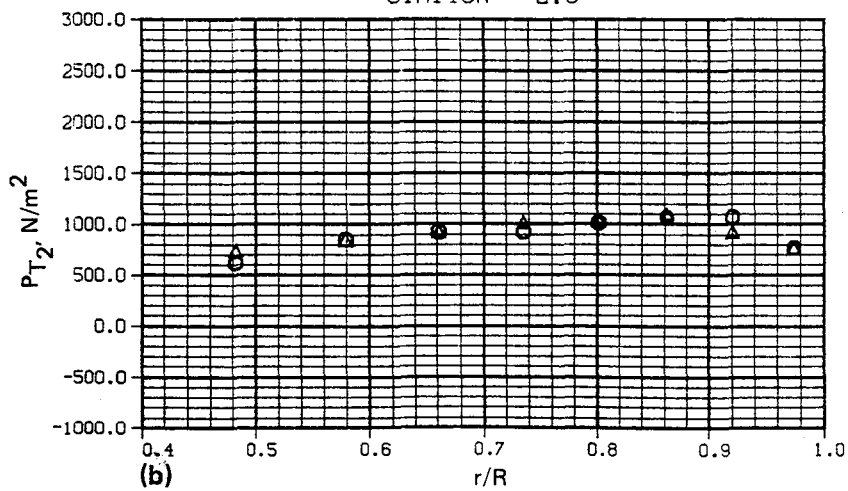
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 143. MASS FLOW: 112.77 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

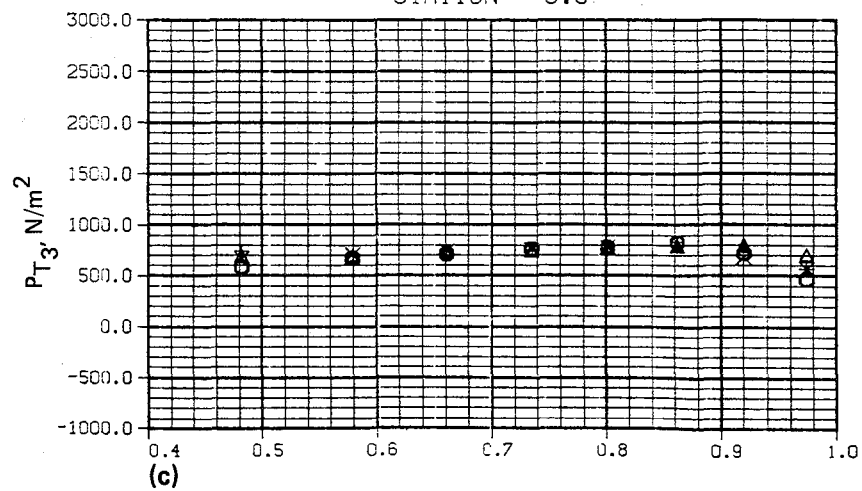


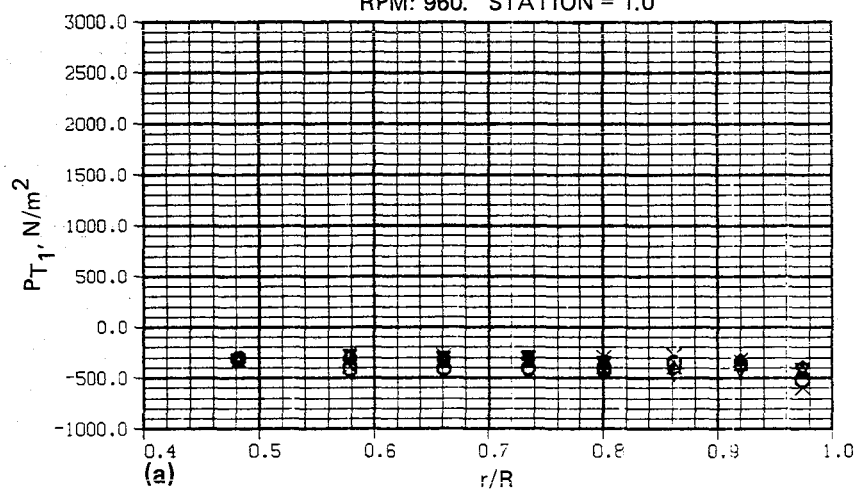
Figure D112.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

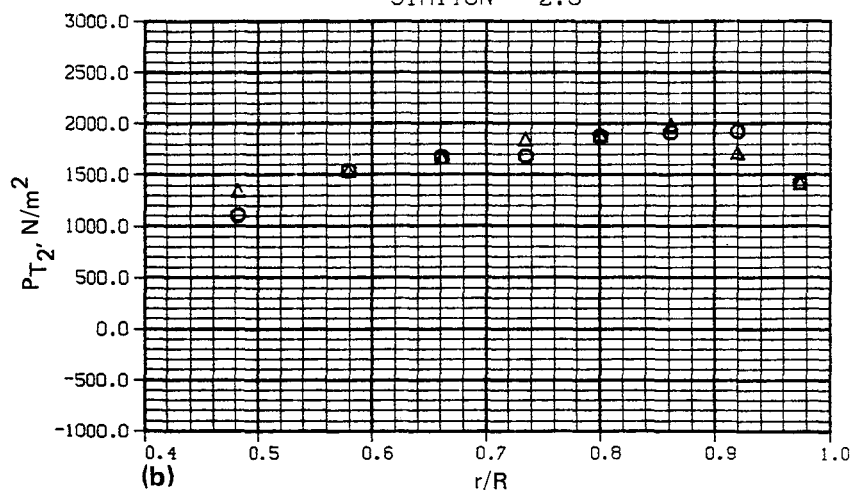
BLADE TYPE: 1. BLADE ANGLE: 54.5

RUN NO: 144. MASS FLOW: 152.07 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

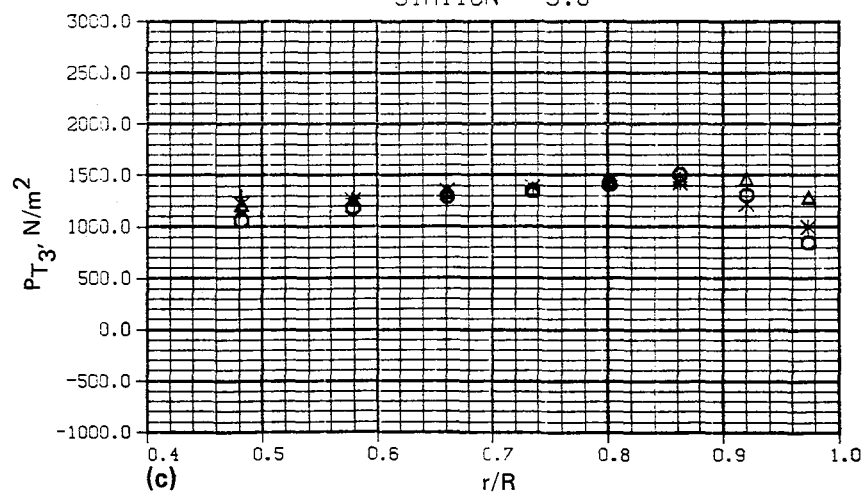


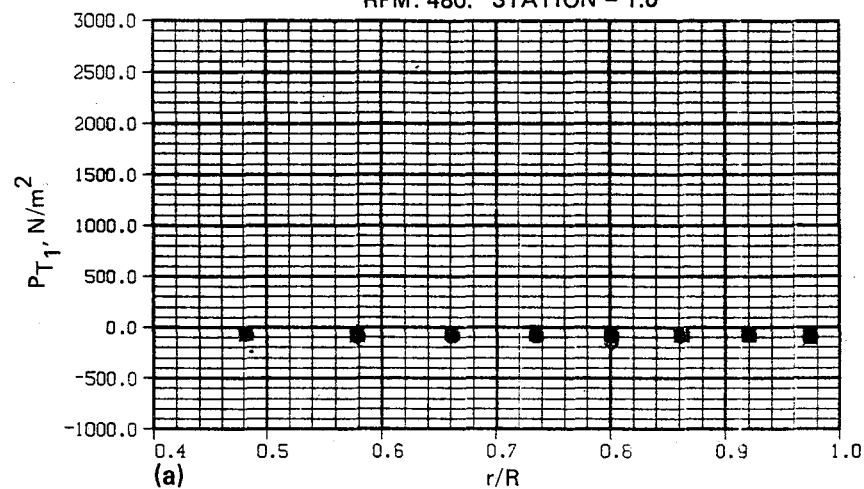
Figure D113.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

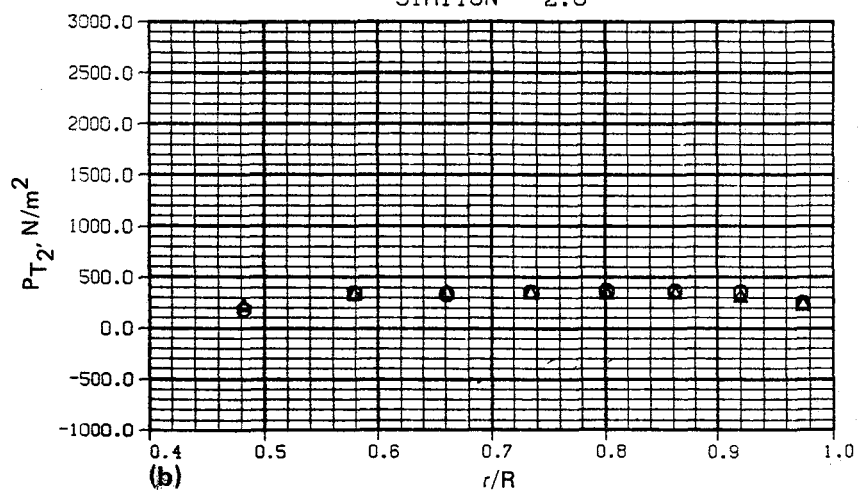
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 225. MASS FLOW: 63.11 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

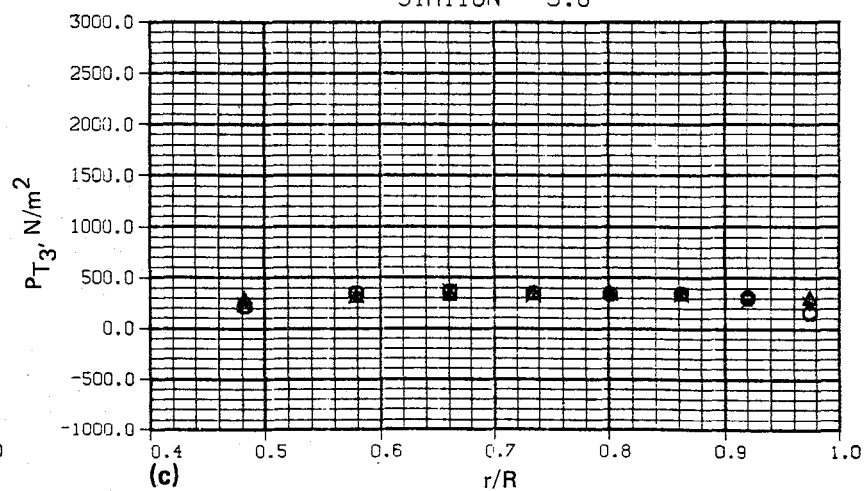


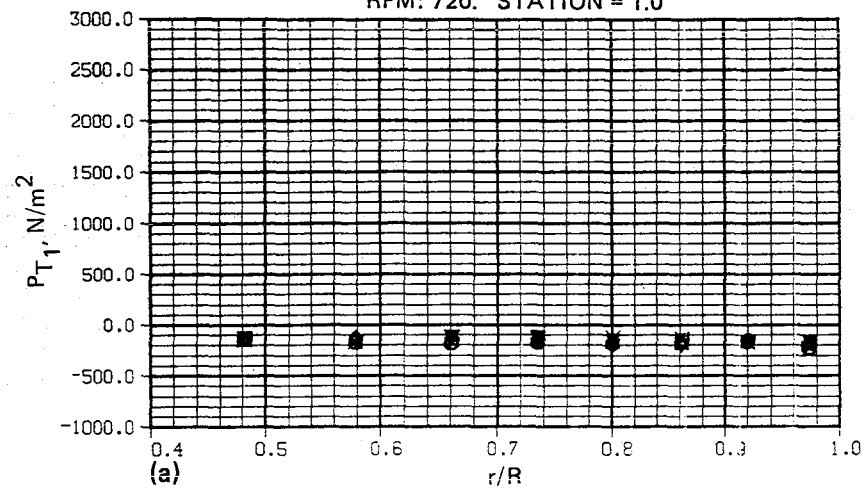
Figure D114.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

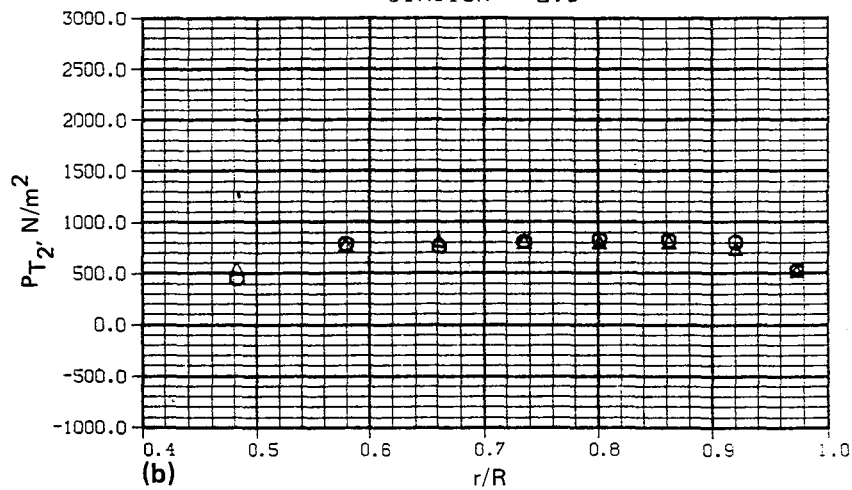
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 226. MASS FLOW: 95.97 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

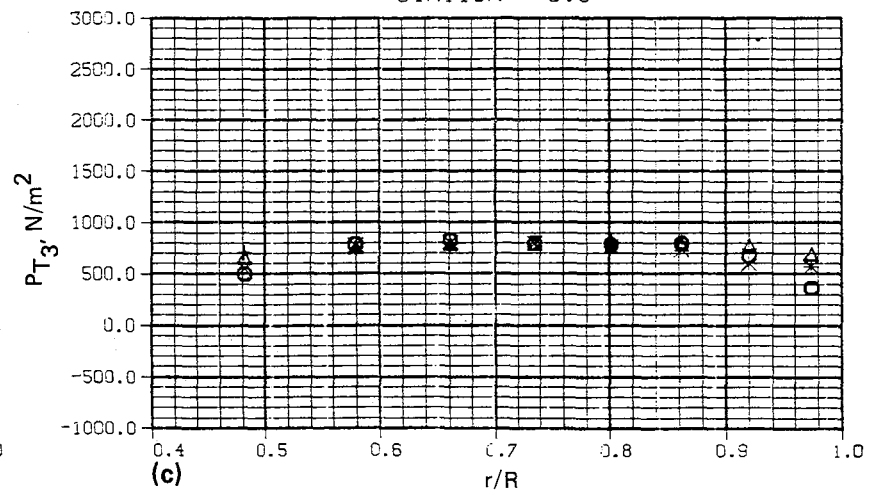


Figure D115.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 227. MASS FLOW: 129.59 slugs/sec

RPM: 962. STATION = 1.0

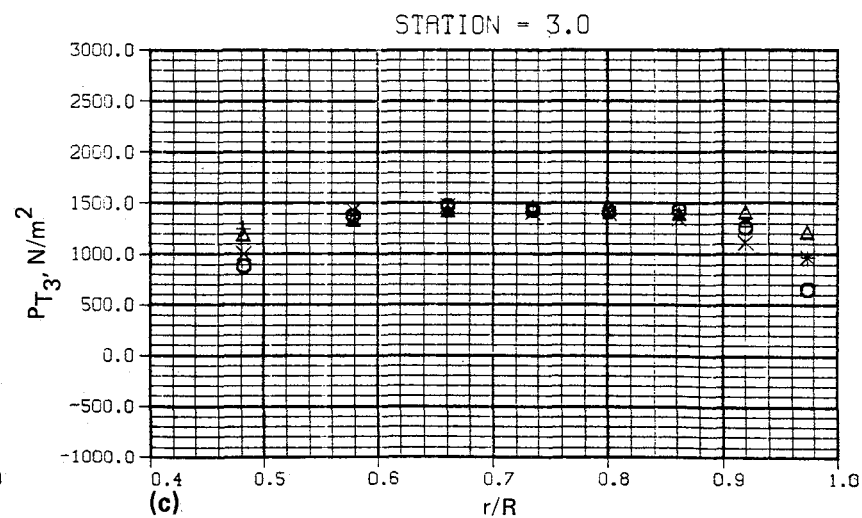
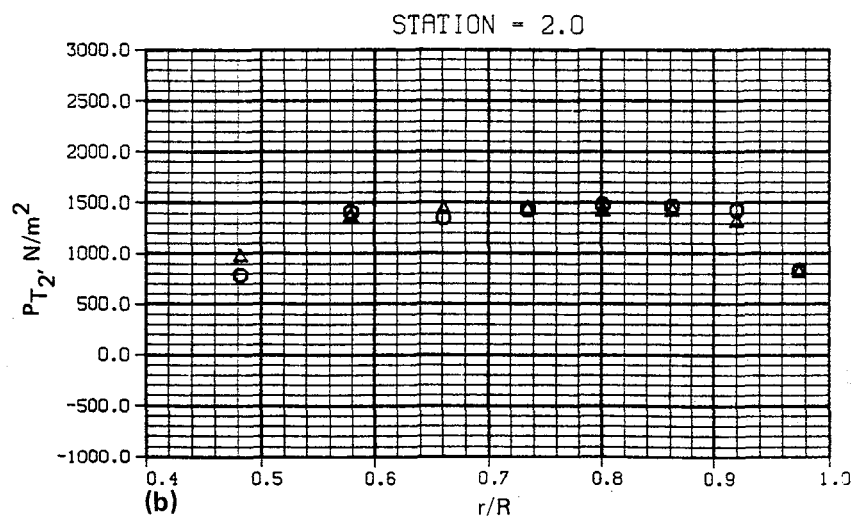
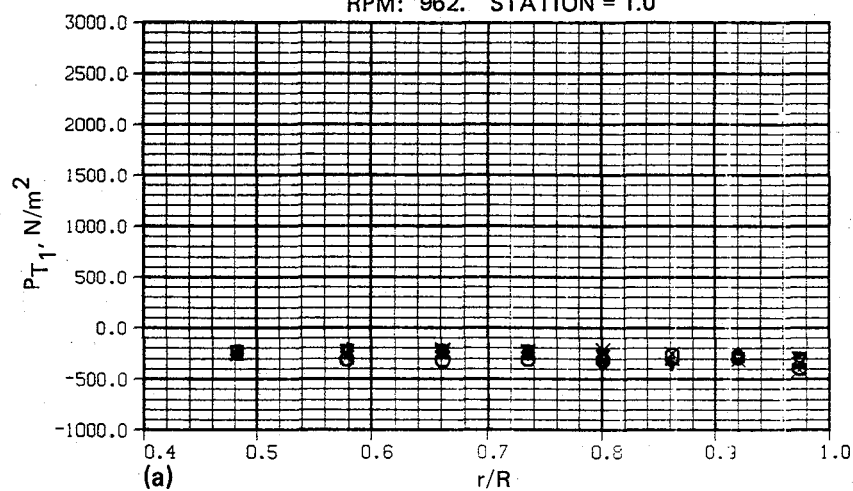


Figure D116.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 228. MASS FLOW: 162.99 slugs/sec

RPM: 1200. STATION = 1.0

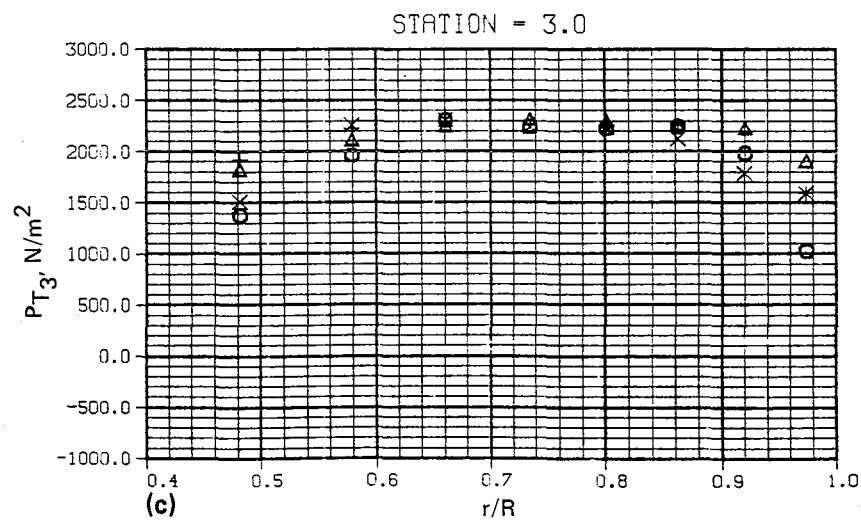
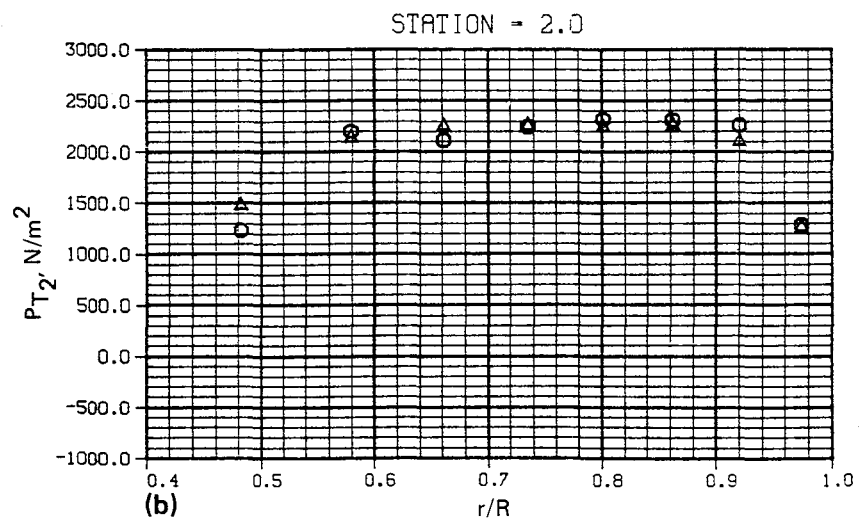
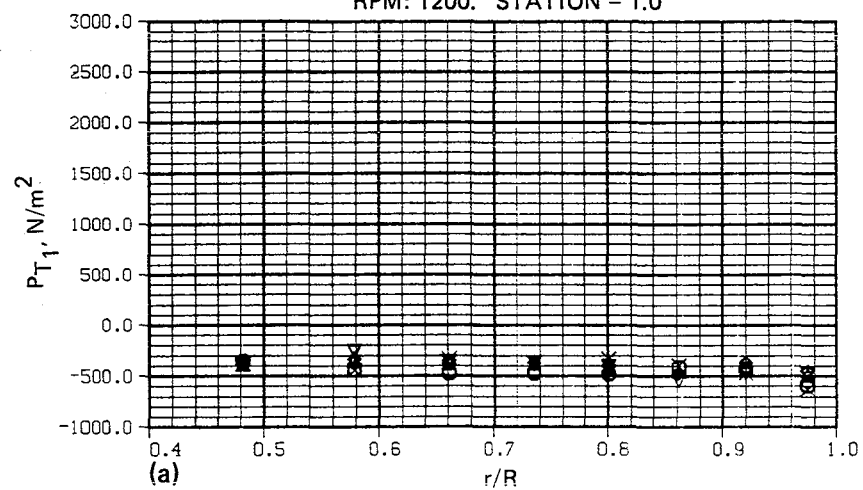


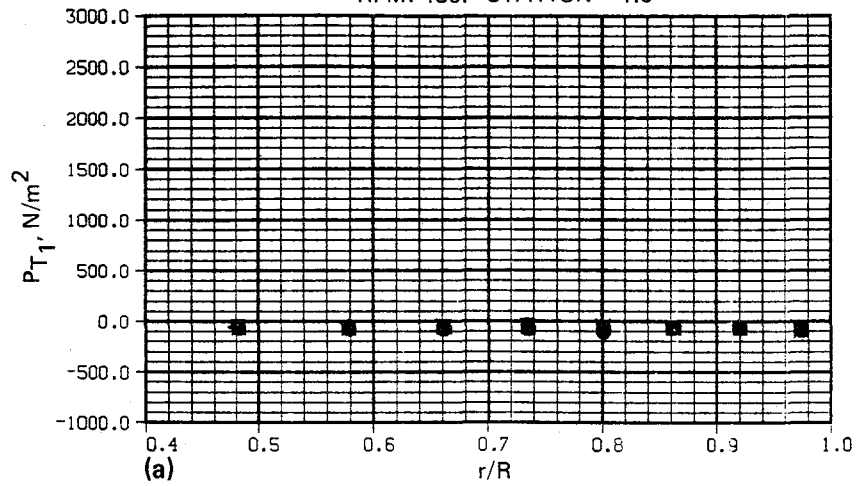
Figure D117.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

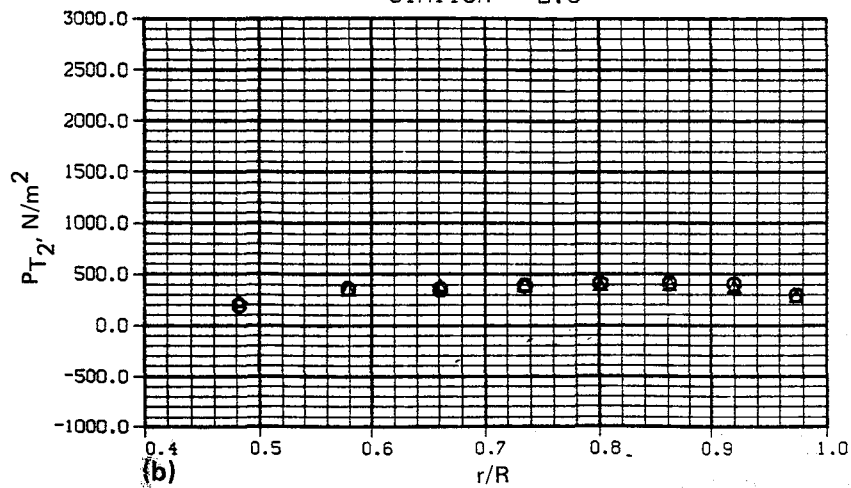
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 229. MASS FLOW: 59.03 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

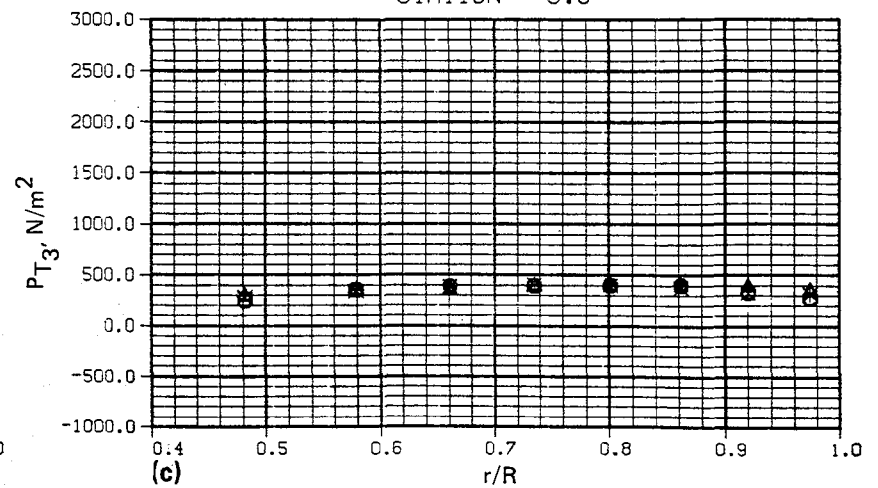


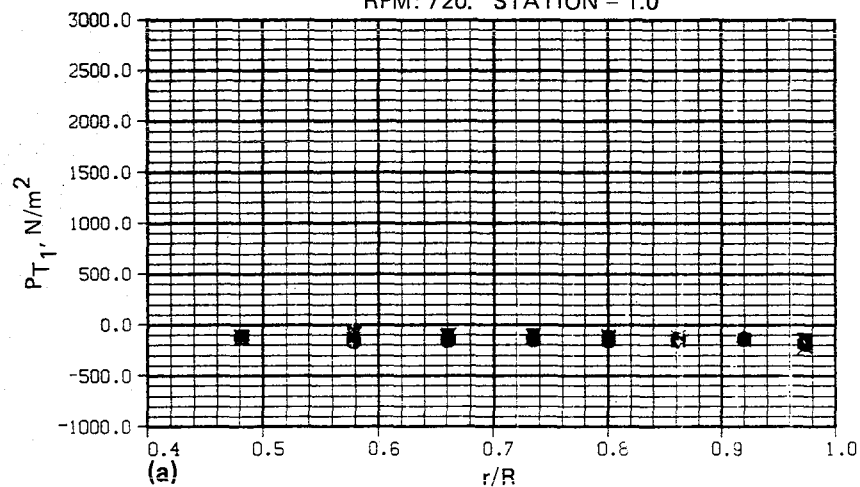
Figure D118.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

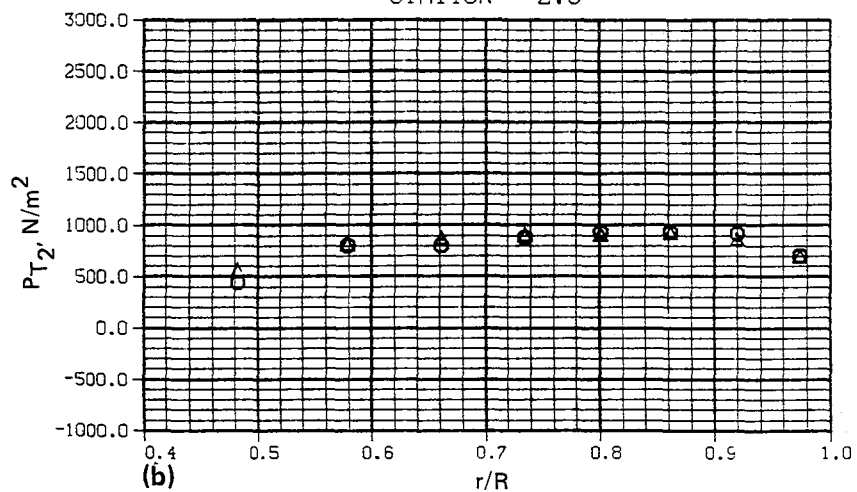
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 230. MASS FLOW: 89.43 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

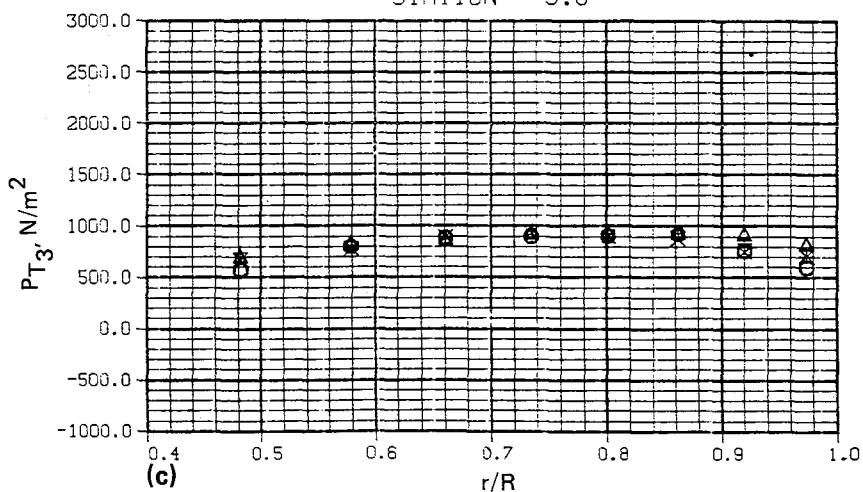


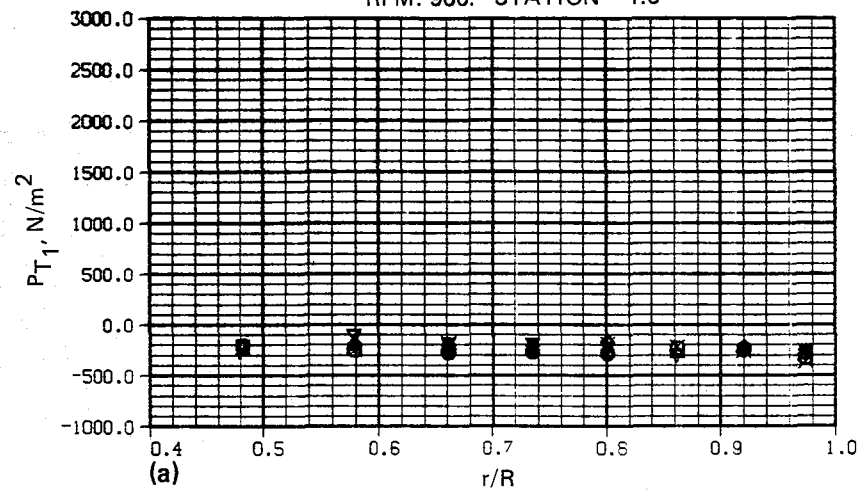
Figure D119.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

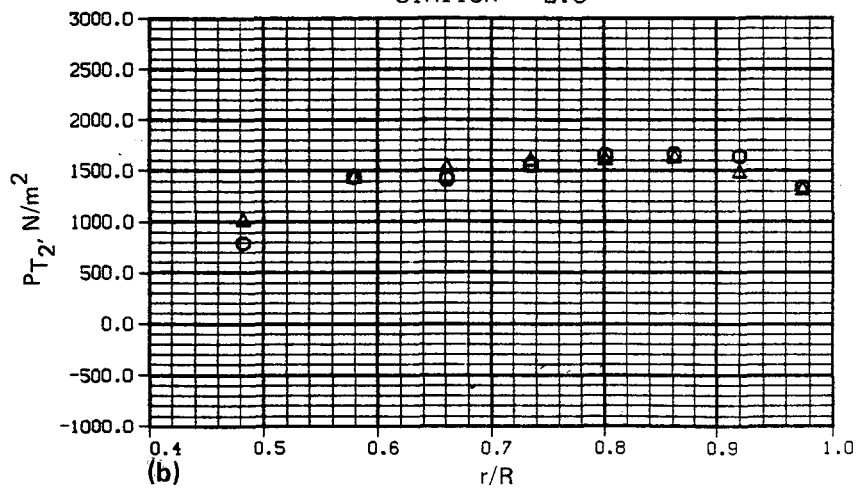
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 231. MASS FLOW: 120.71 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

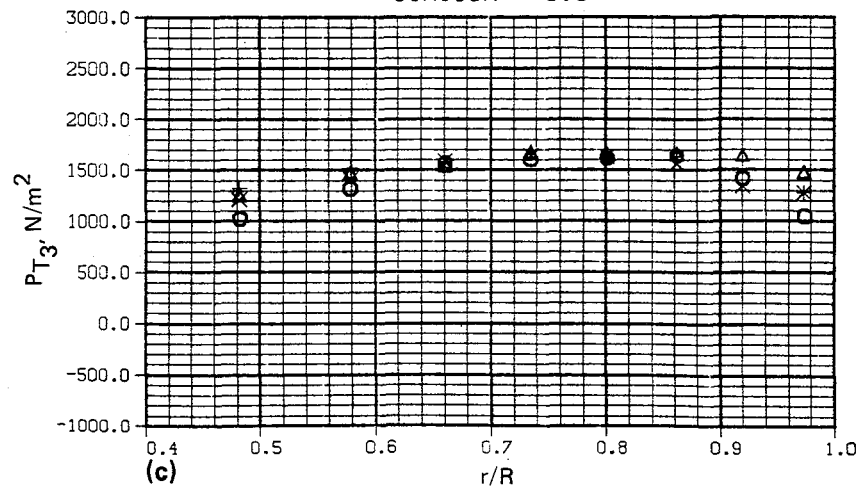


Figure D120.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 232. MASS FLOW: 152.14 slugs/sec

RPM: 1202. STATION = 1.0

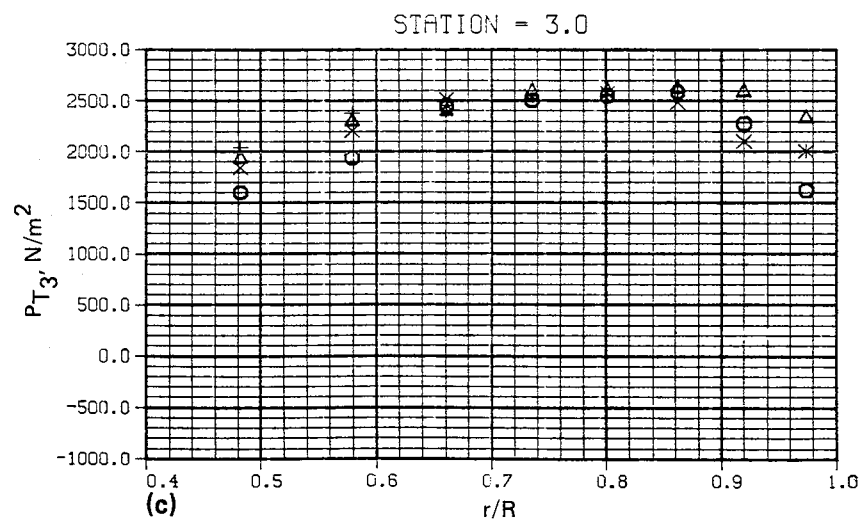
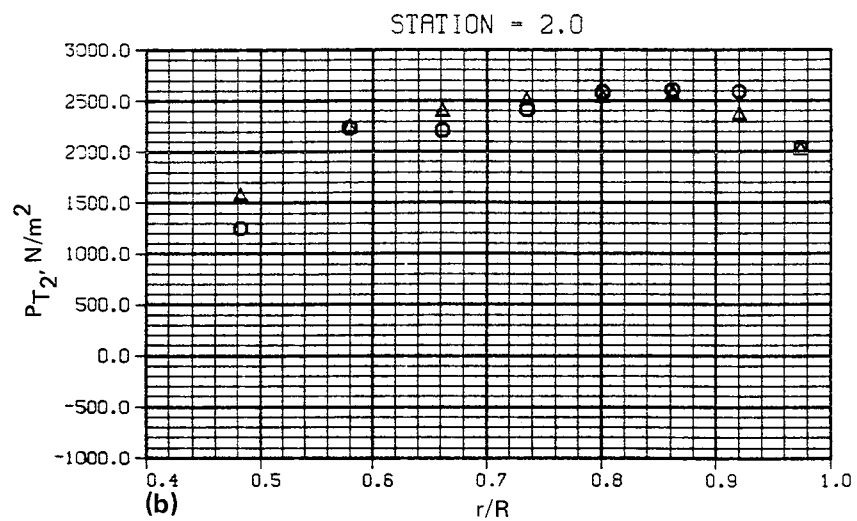
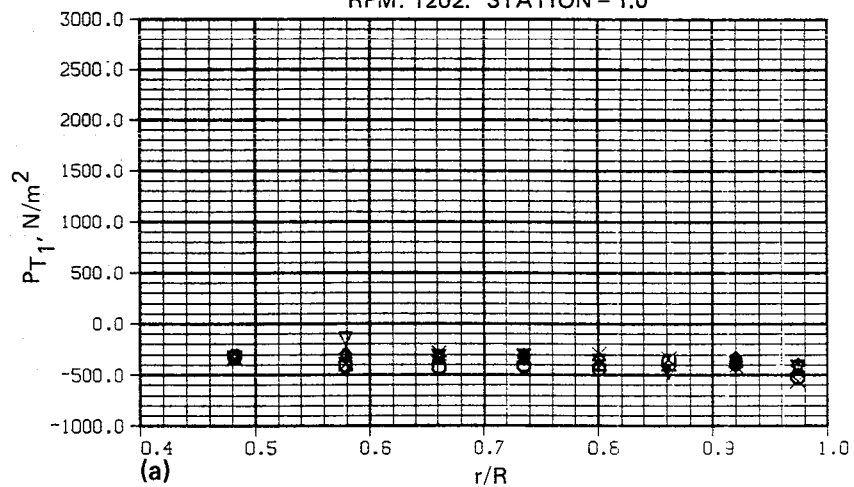


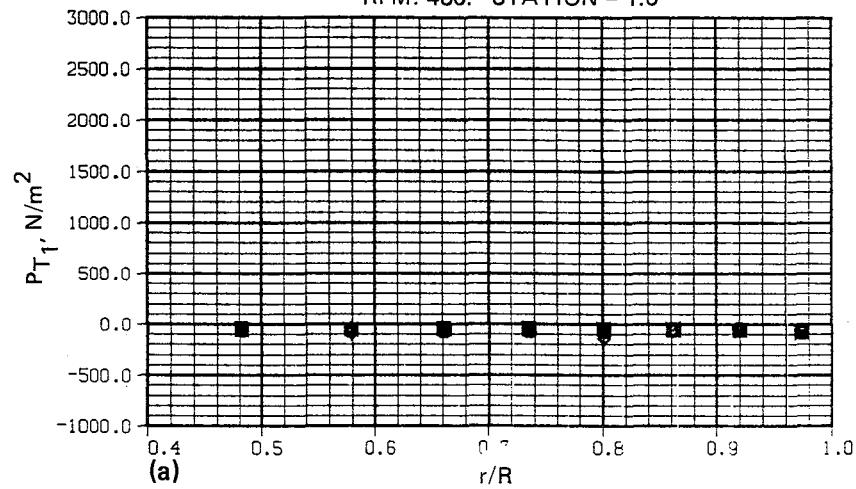
Figure D121.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

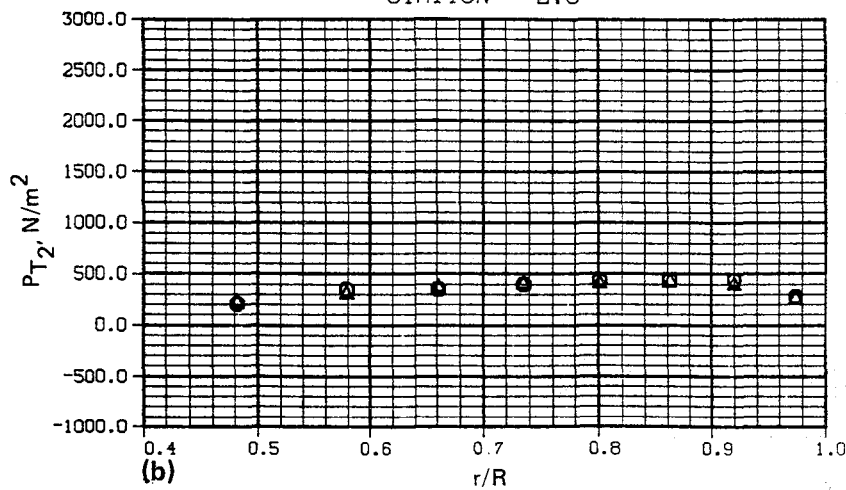
BLADE TYPE: 1. BLADE ANGLE: 41.2

RUN NO: 233. MASS FLOW: 54.82 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

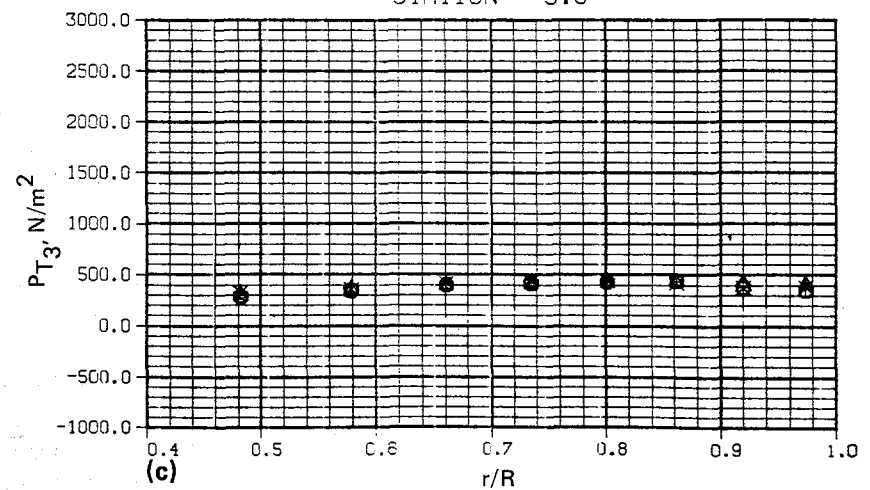
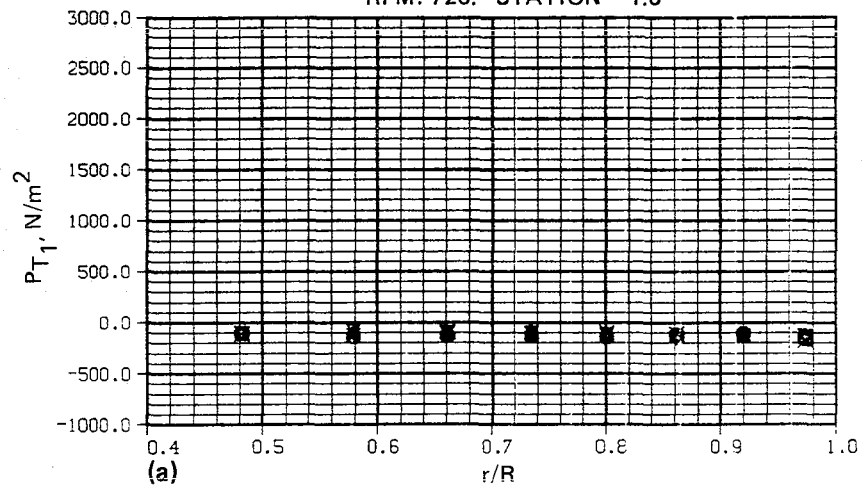
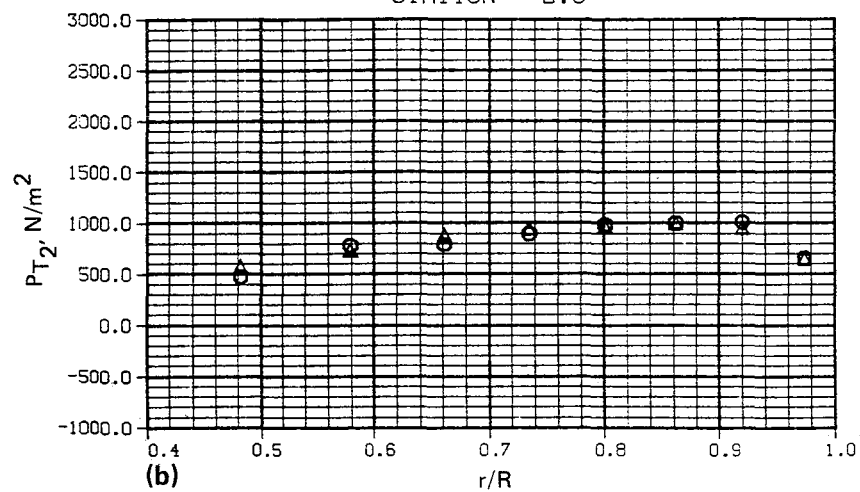


Figure D122.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 41.2
 RUN NO: 234. MASS FLOW: 83.33 slugs/sec
 RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

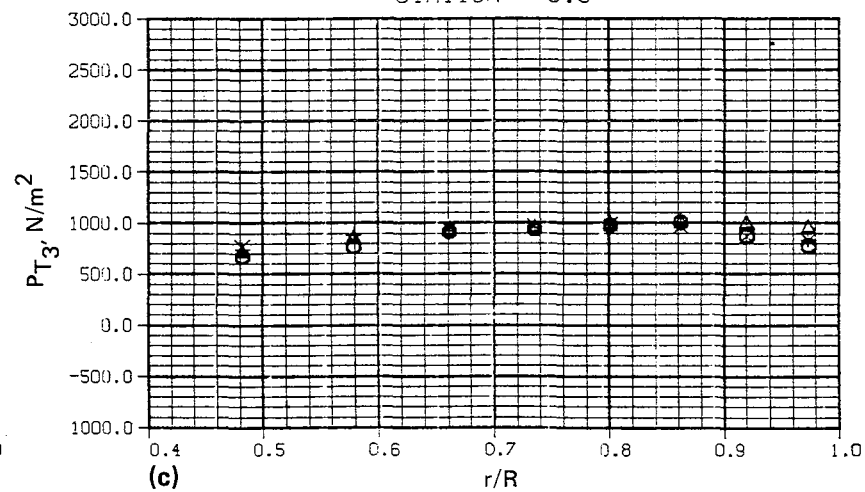


Figure D123.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 235. MASS FLOW: 12.53 slugs/sec

RPM: 960. STATION = 1.0

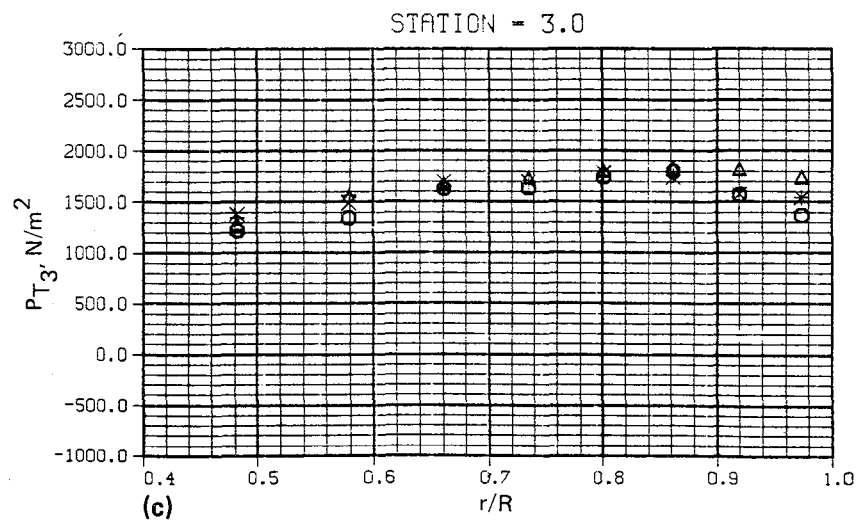
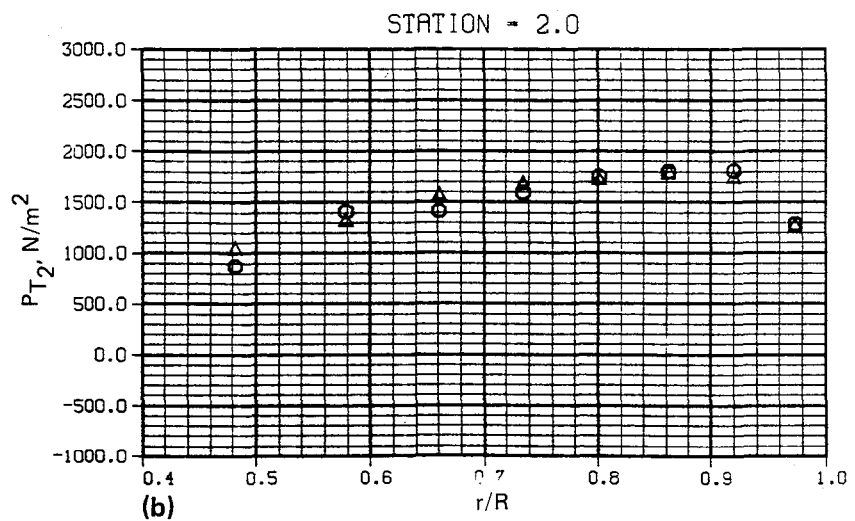
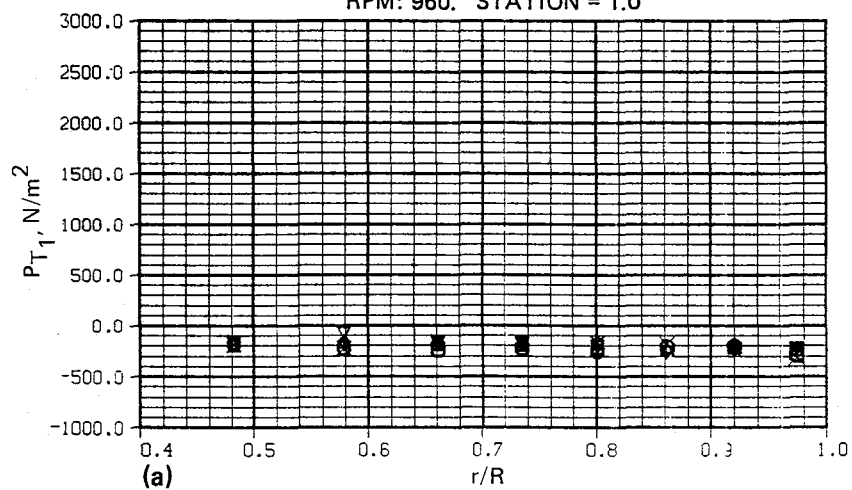


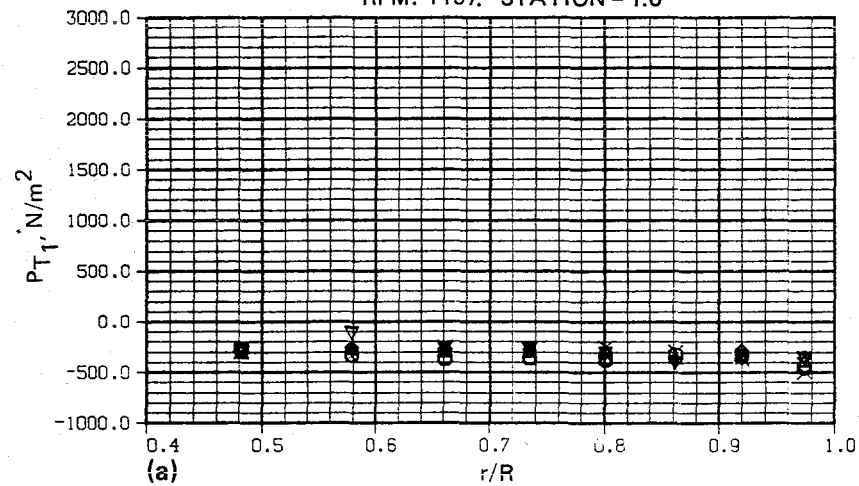
Figure D124.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

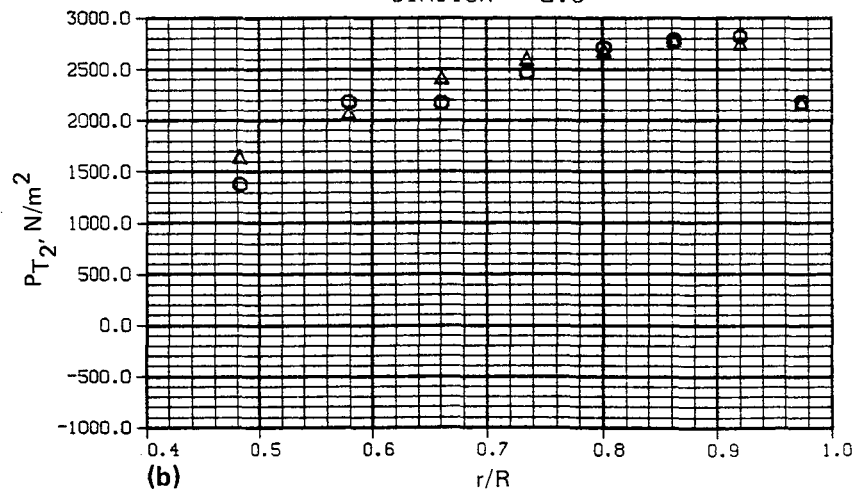
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 236. MASS FLOW: 140.94 slugs/sec

RPM: 1197. STATION = 1.0



STATION - 2.0



STATION - 3.0

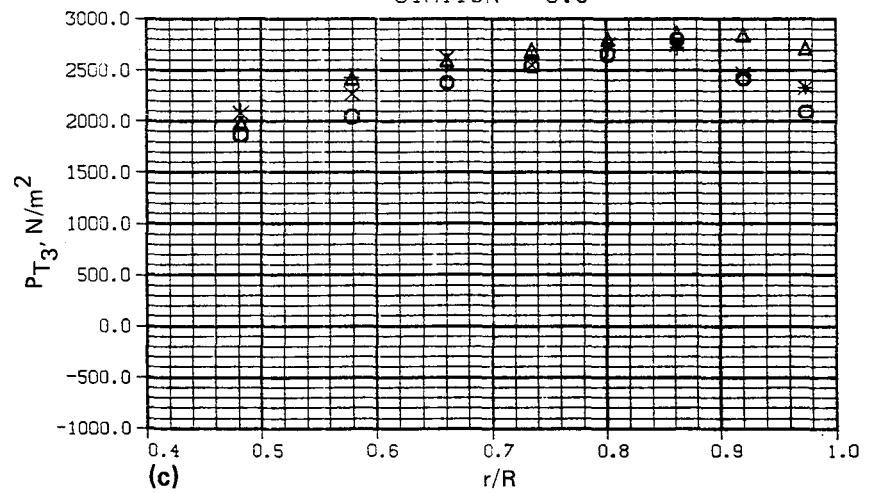


Figure D125.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 237. MASS FLOW: 50.52 slugs/sec

RPM: 479. STATION = 1.0

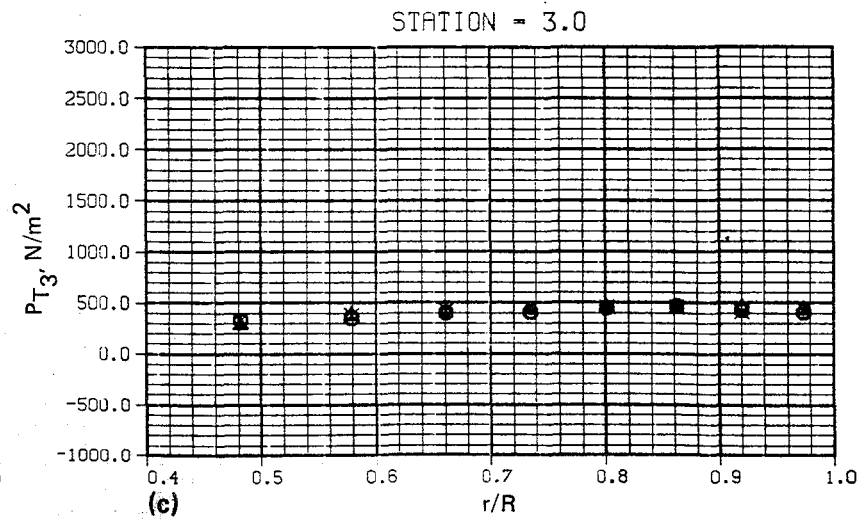
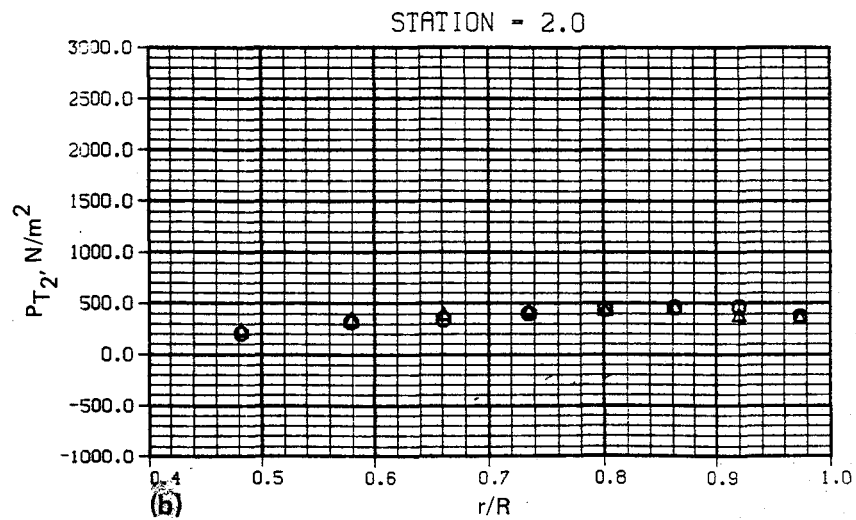
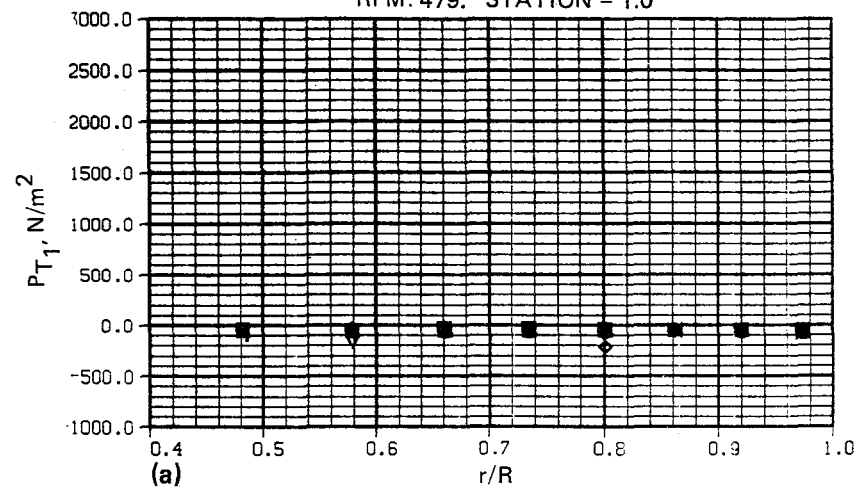
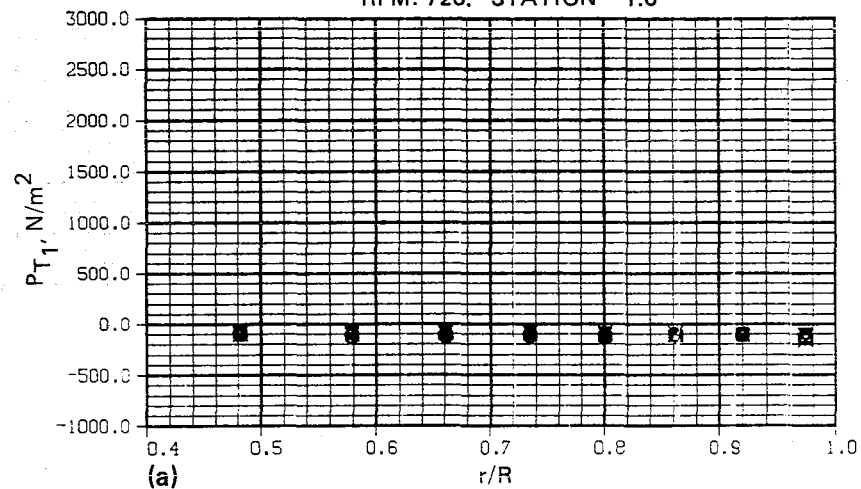
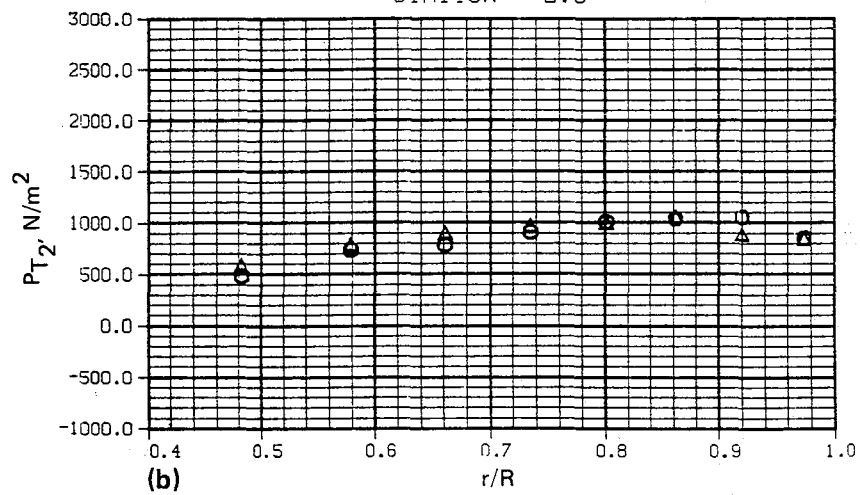


Figure D126.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 41.2
 RUN NO: 238. MASS FLOW: 77.64 slugs/sec
 RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

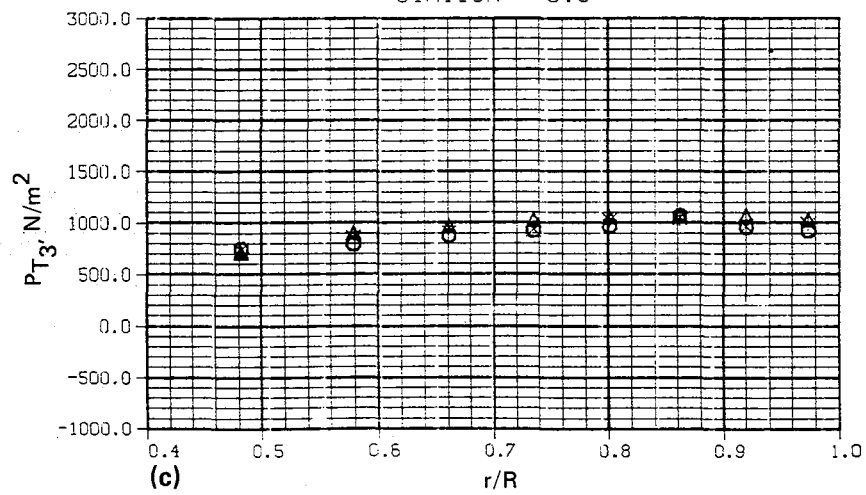


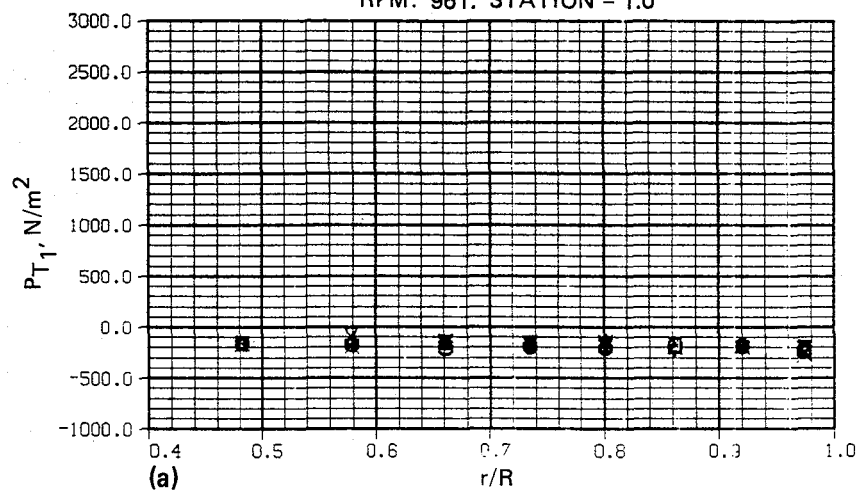
Figure D127.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

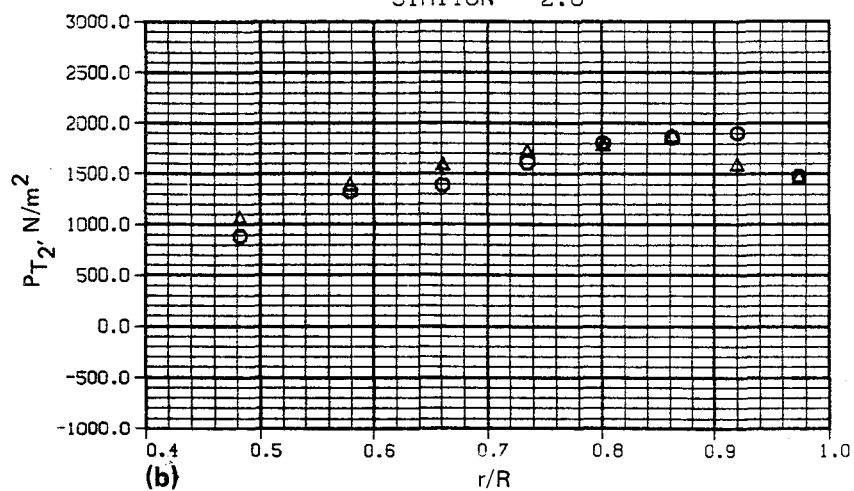
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 239. MASS FLOW: 104.85 slugs/sec

RPM: 961. STATION = 1.0



STATION = 2.0



STATION = 3.0

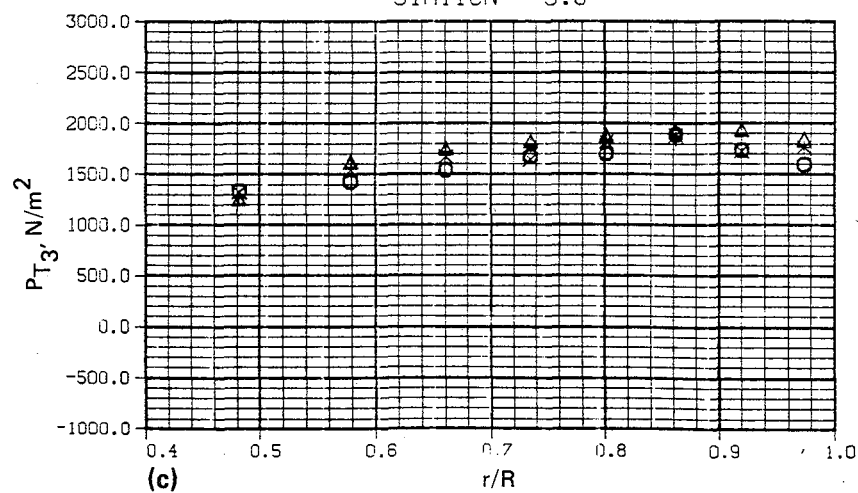
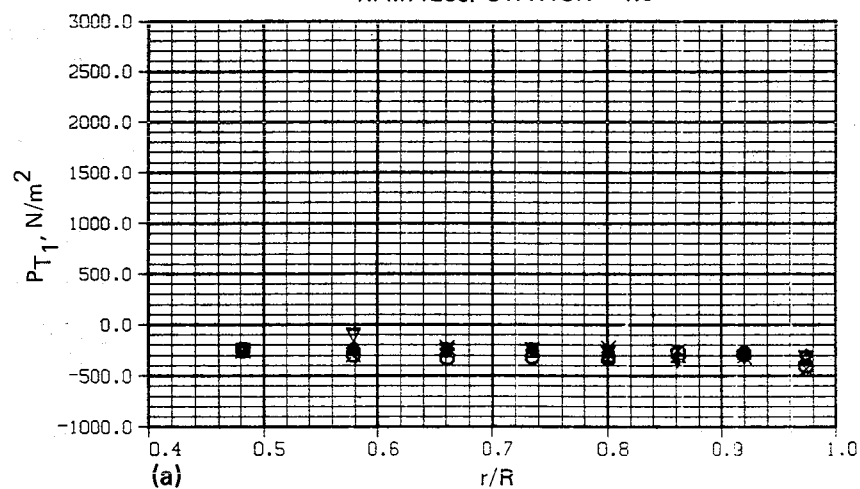
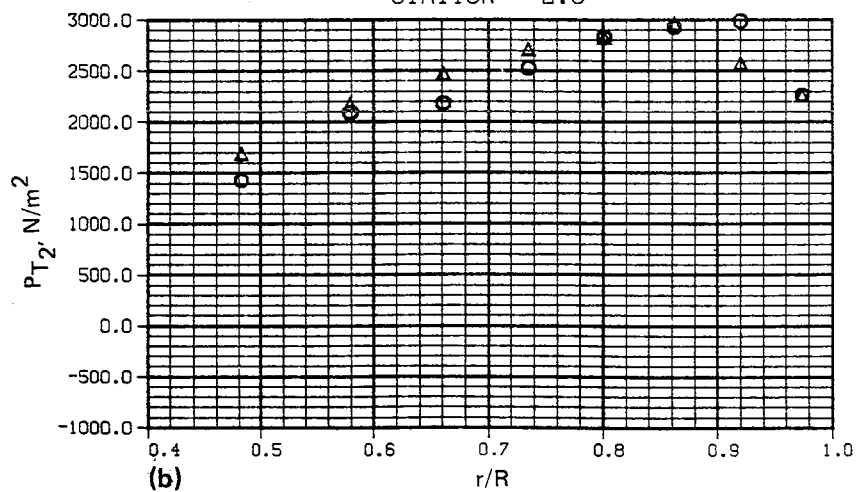


Figure D128.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 41.2
 RUN NO: 240. MASS FLOW: 132.43 slugs/sec
 RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

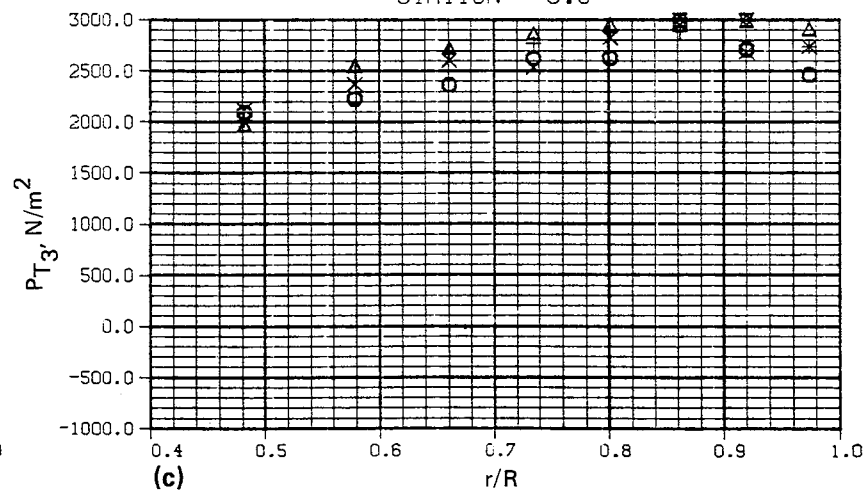


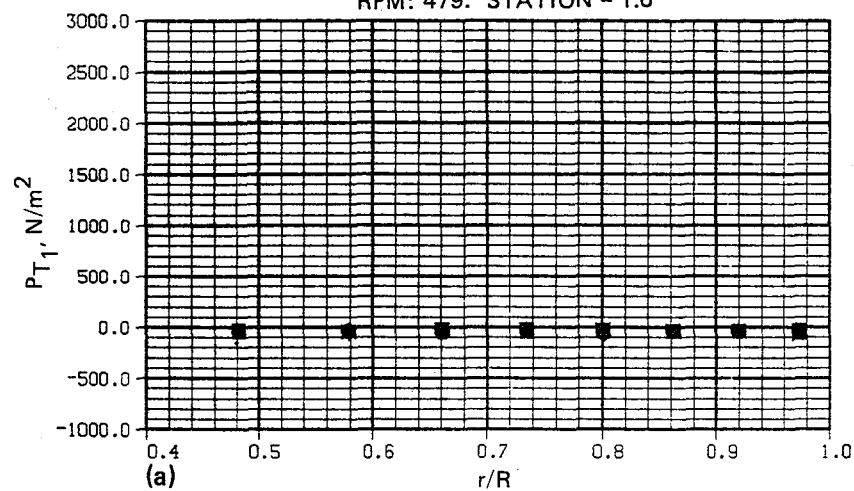
Figure D129.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

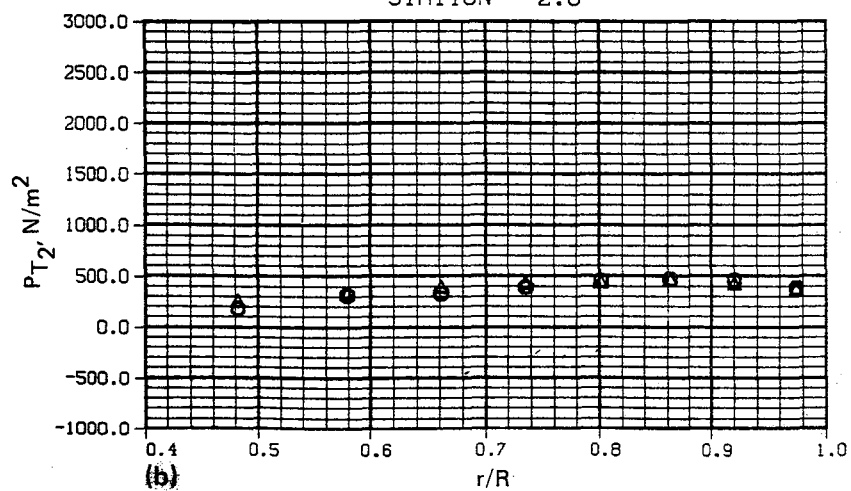
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 241. MASS FLOW: 44.04 slugs/sec

RPM: 479. STATION = 1.0



STATION - 2.0



STATION - 3.0

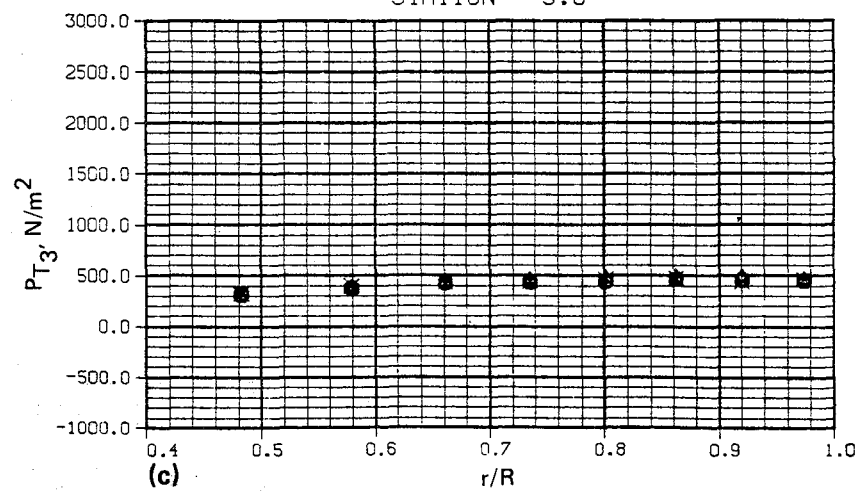


Figure D130.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 41.2
 RUN NO: 242. MASS FLOW: 67.99 slugs/sec
 RPM: 721. STATION = 1.0

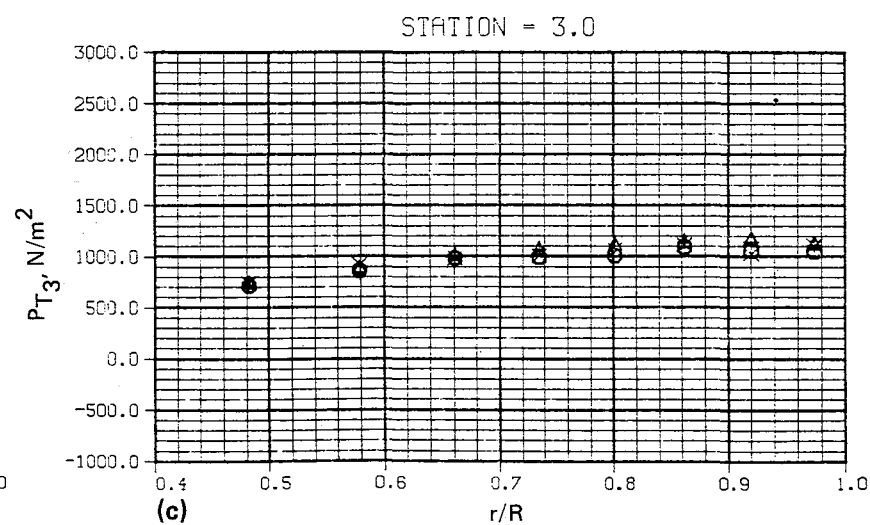
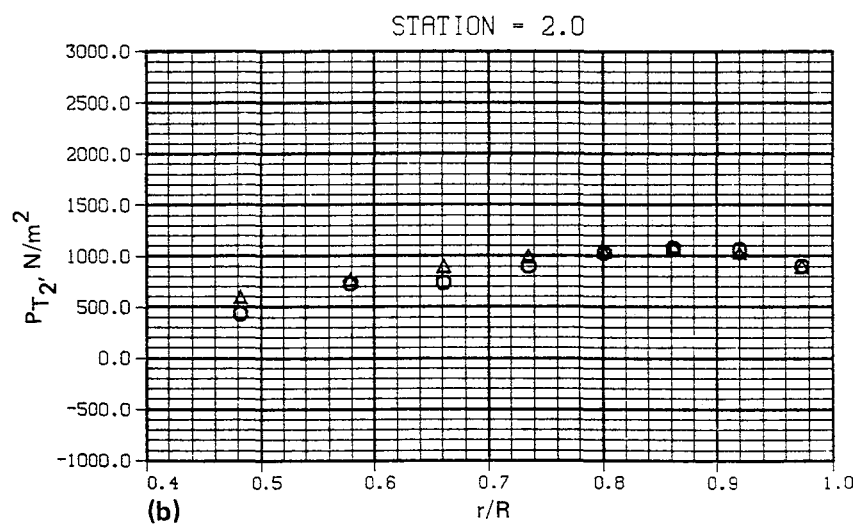
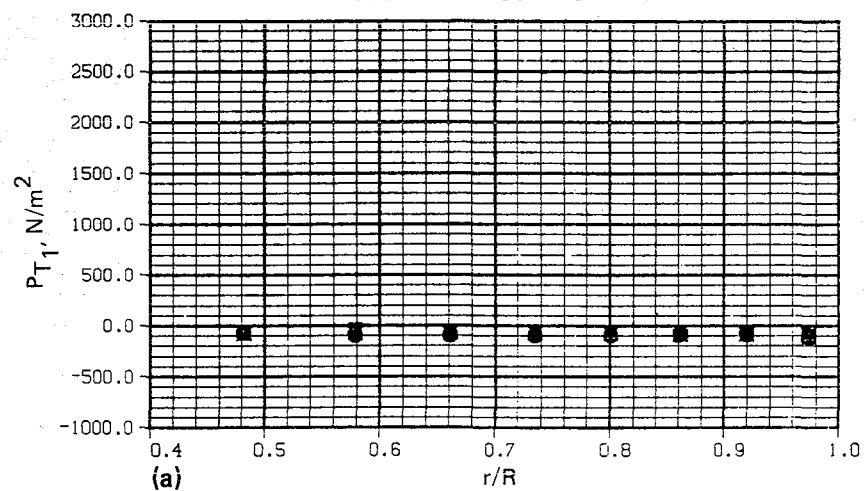


Figure D131.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 243, MASS FLOW: 92.57 slugs/sec

RPM: 961. STATION = 1.0

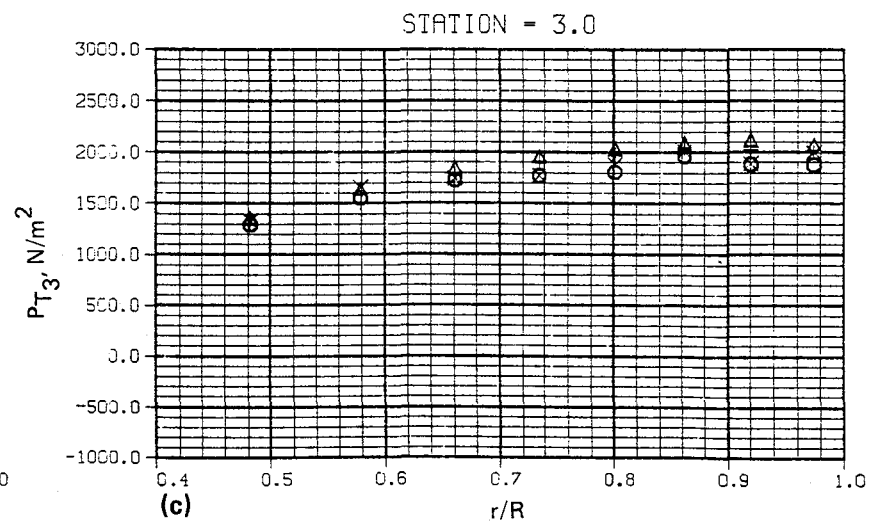
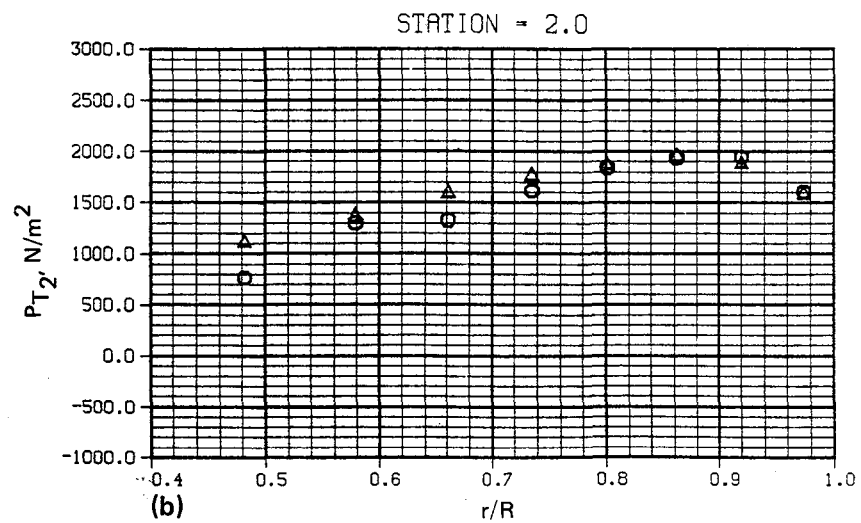
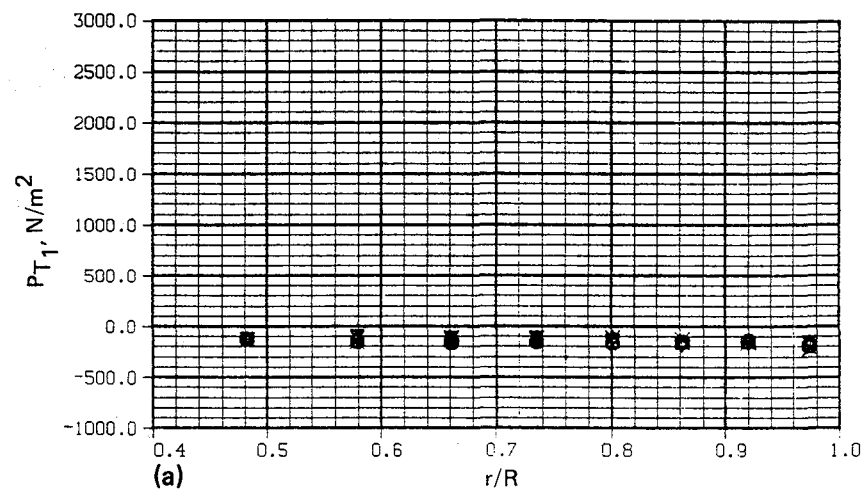
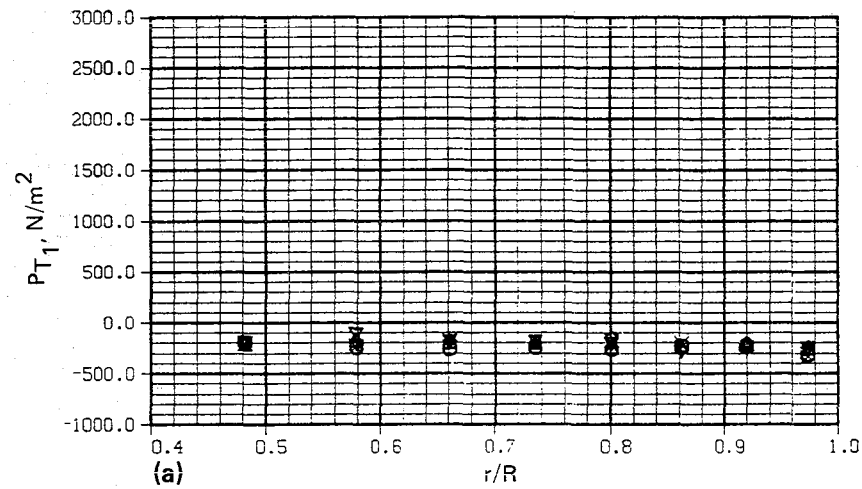
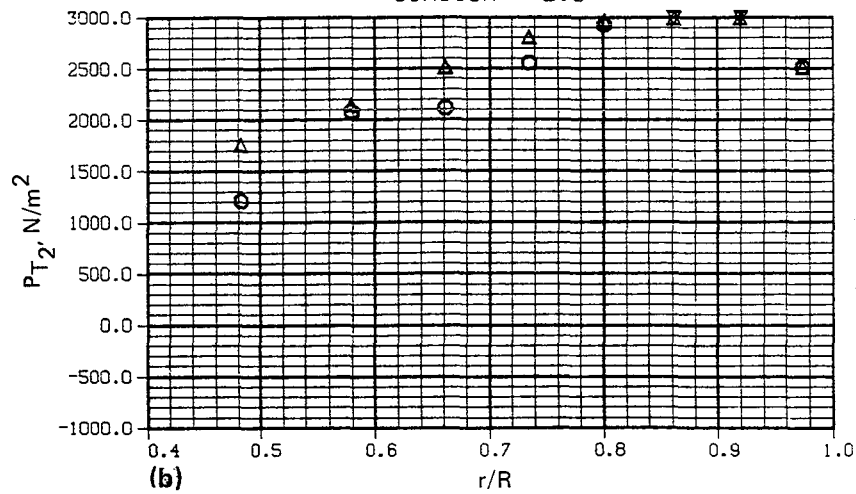


Figure D132.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 41.2
 RUN NO: 244. MASS FLOW: 117.36 slugs/sec
 RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

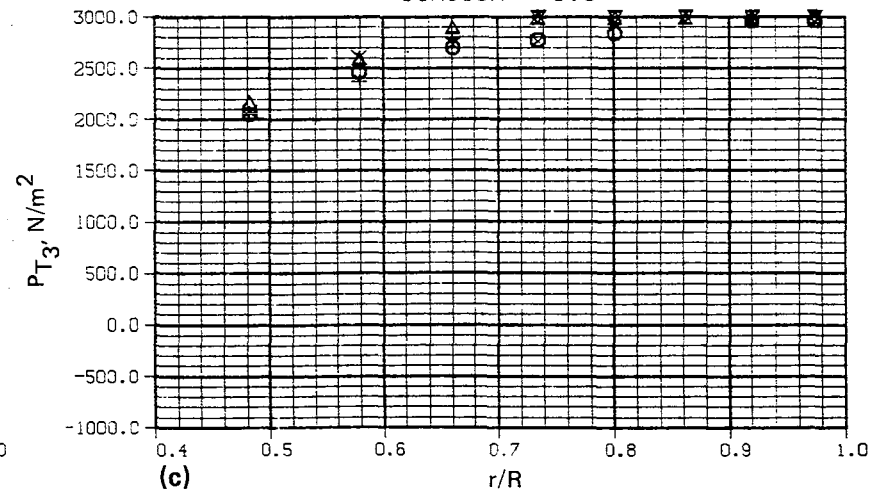


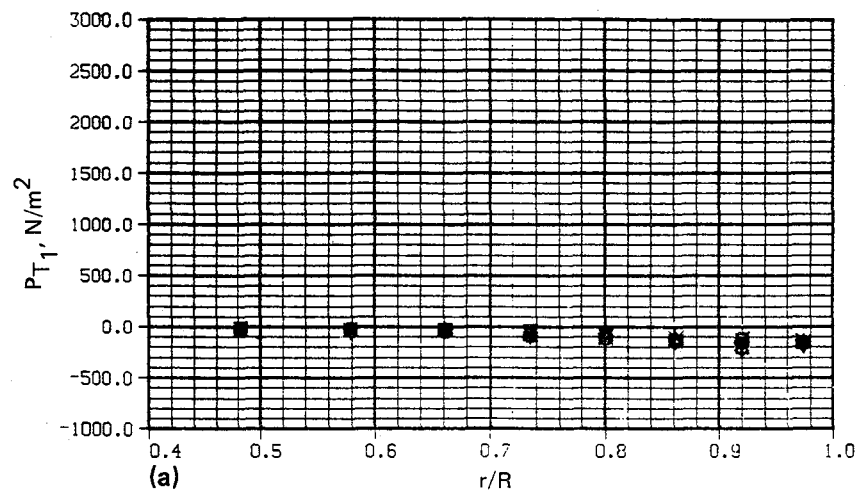
Figure D133.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

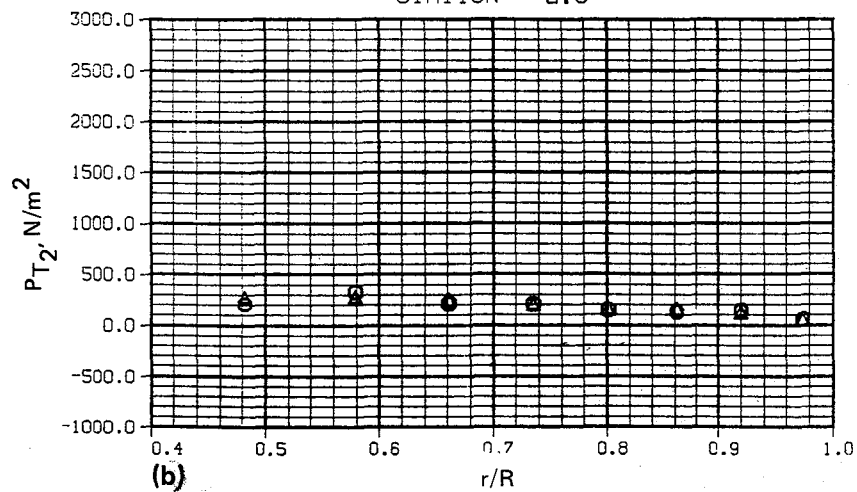
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 245. MASS FLOW: 20.86 slugs/sec

RPM: 482. STATION = 1.0



STATION = 2.0



STATION = 3.0

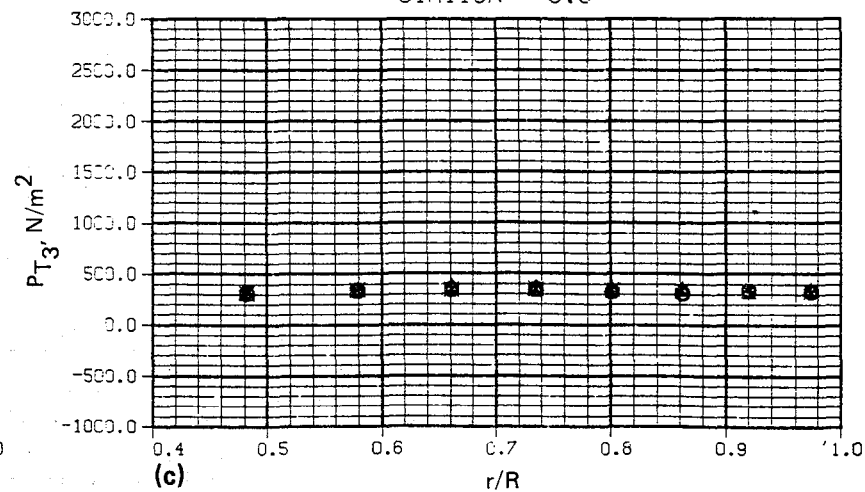


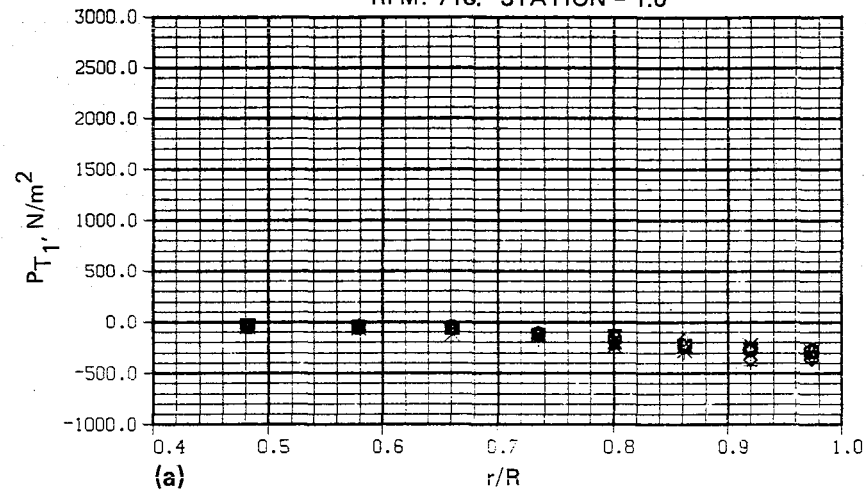
Figure D134.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

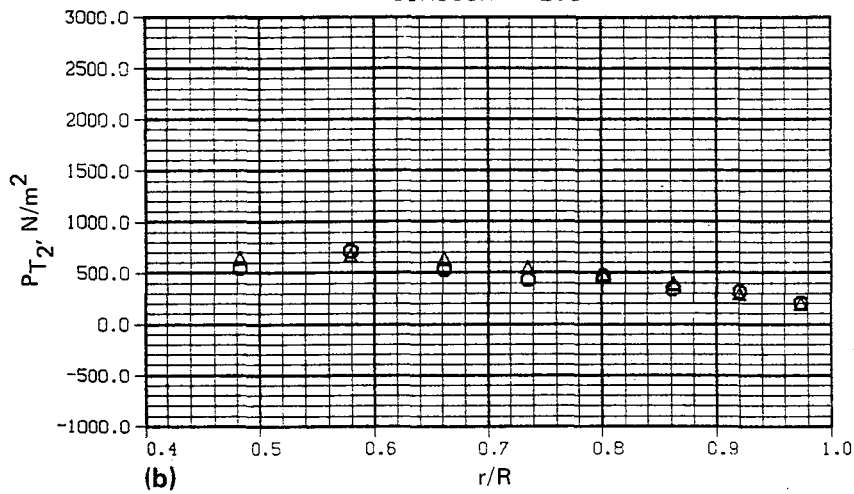
BLADE TYPE: 2. BLADE ANGLE: 41.2

RUN NO: 246. MASS FLOW: 40.17 slugs/sec

RPM: 718. STATION = 1.0



STATION = 2.0



STATION = 3.0

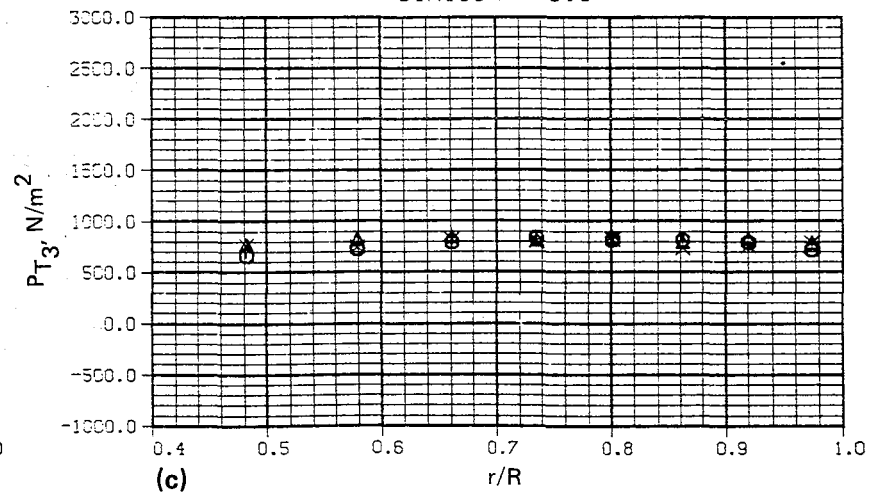


Figure D135.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 44.4

RUN NO: 248. MASS FLOW: 77.98 slugs/sec

RPM: 1203. STATION = 1.0

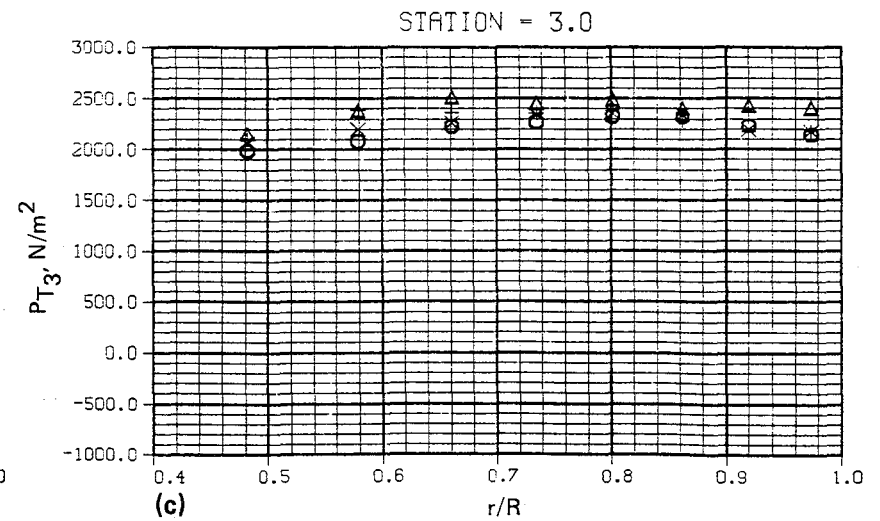
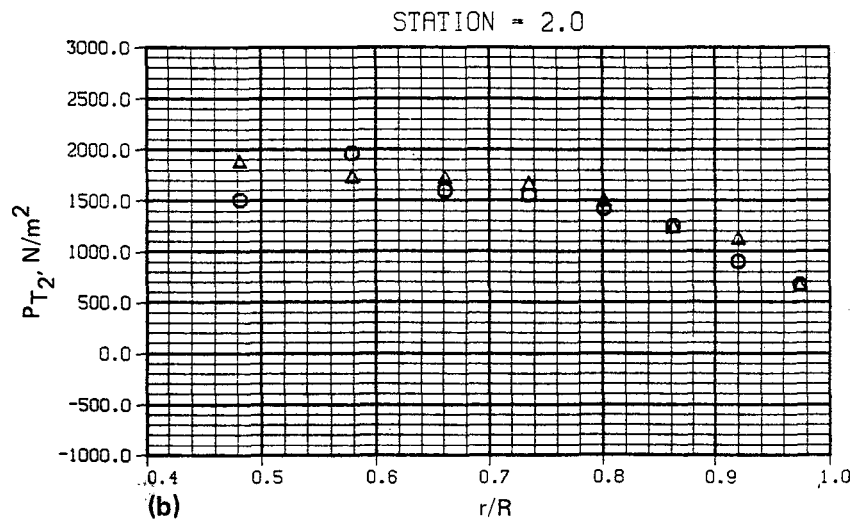
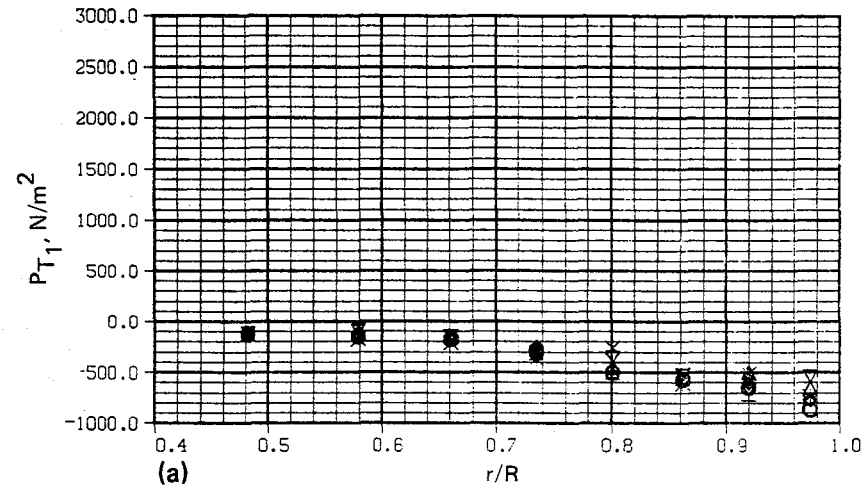


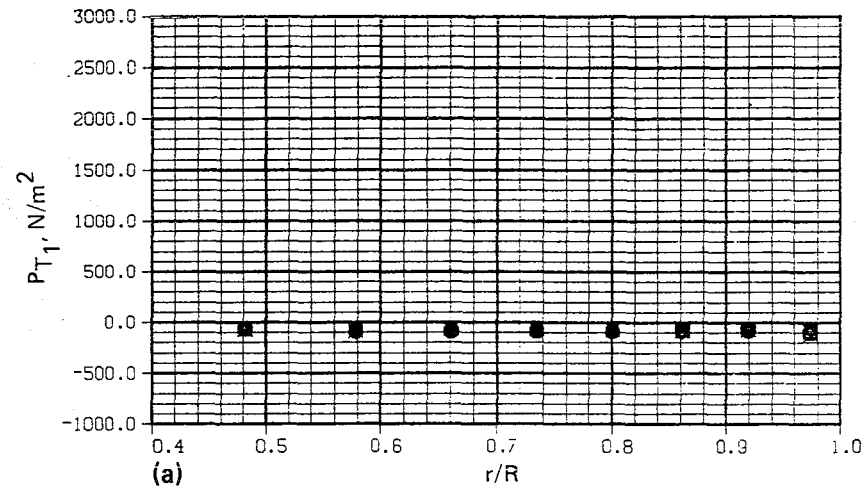
Figure D136.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

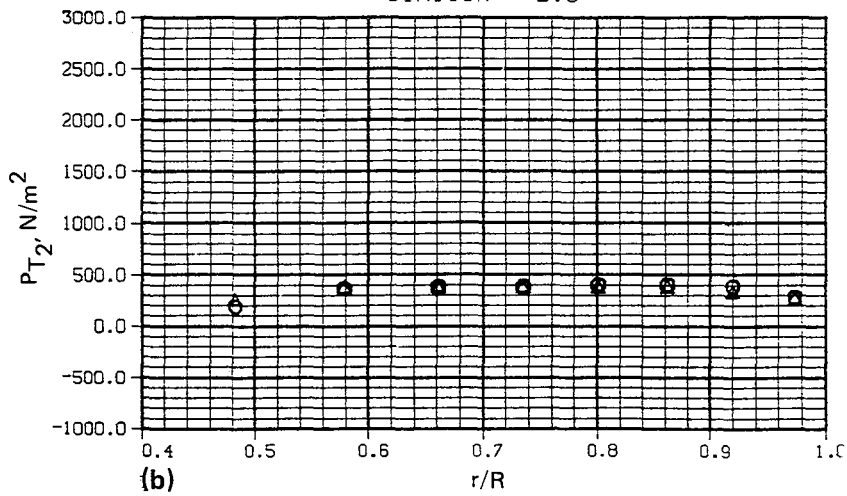
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 253. MASS FLOW: 65.72 slugs/sec

RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

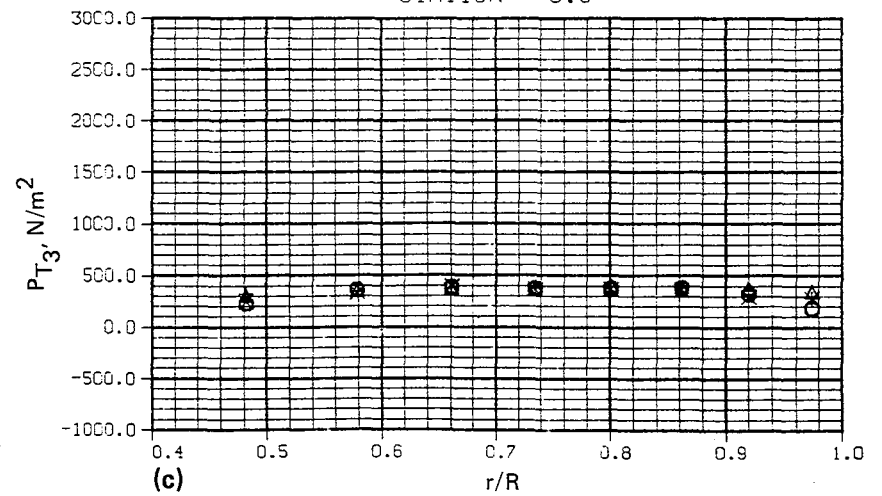


Figure D137.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 254. MASS FLOW: 99.42 slugs/sec

RPM: 720. STATION = 1.0

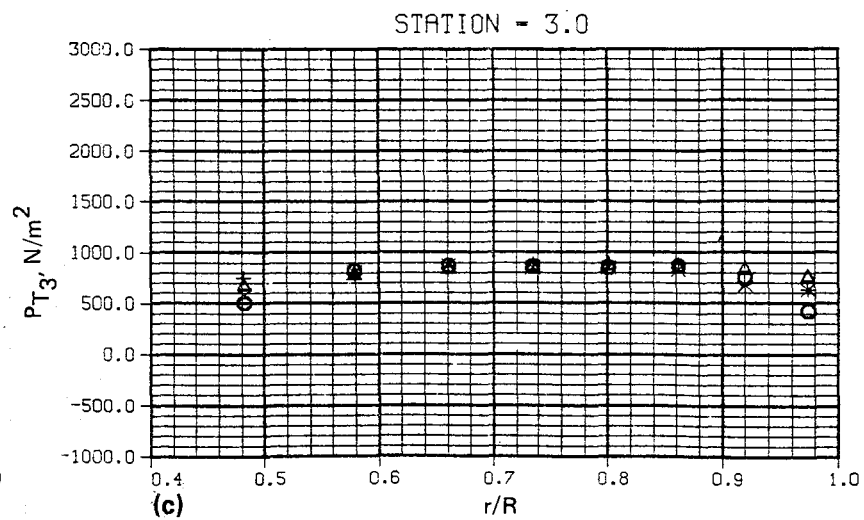
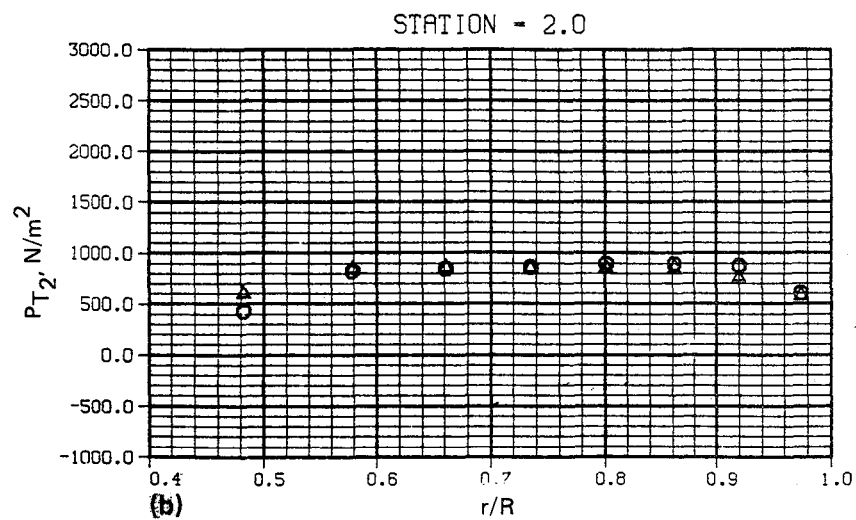
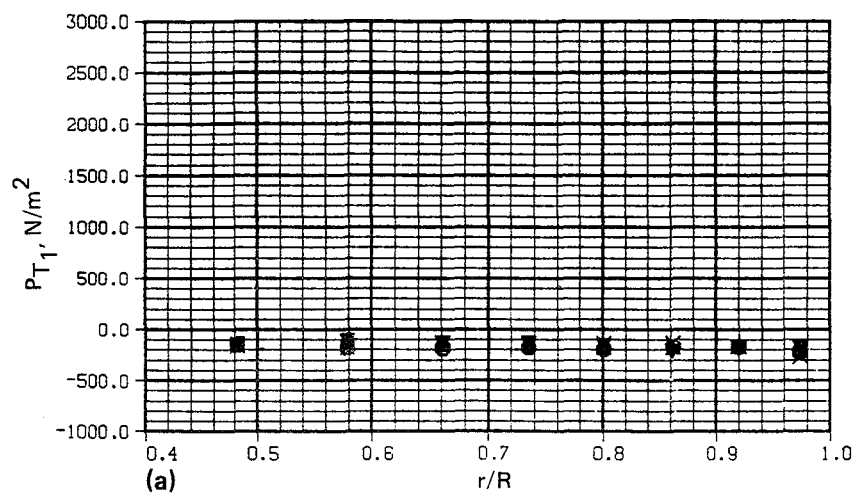


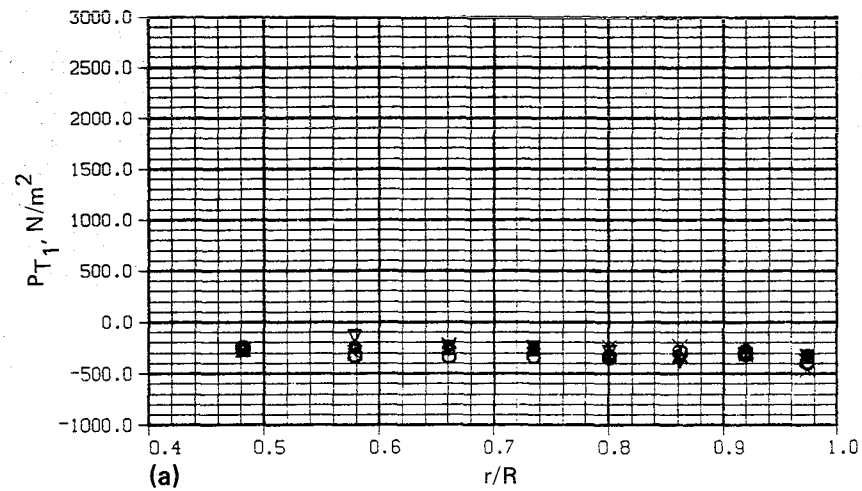
Figure D138.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

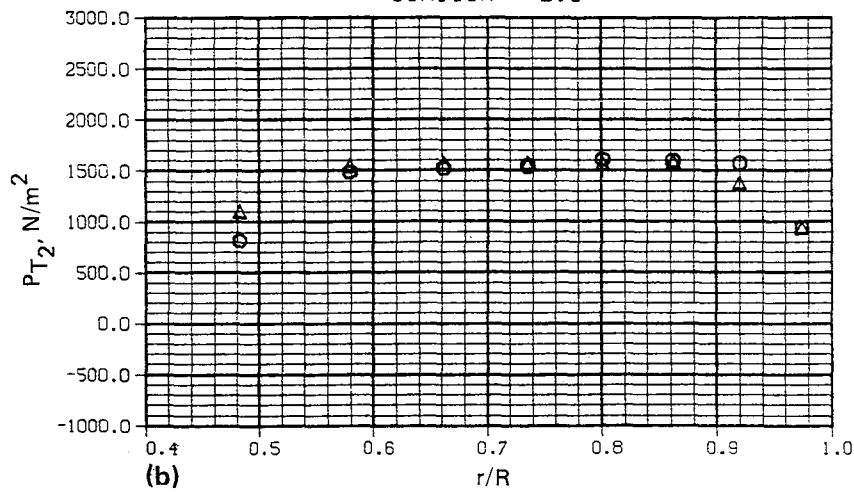
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 255. MASS FLOW: 134.46 slugs/sec

RPM: 965. STATION = 1.0



STATION = 2.0



STATION = 3.0

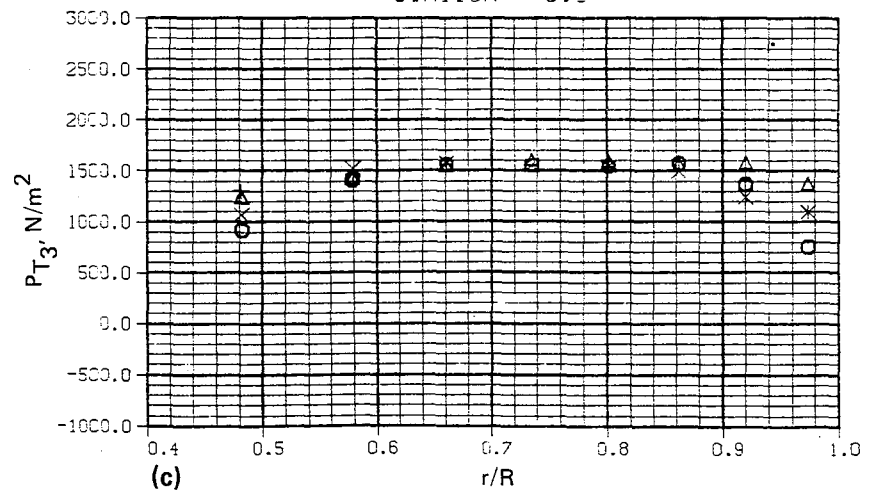


Figure D139.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 256. MASS FLOW: 169.27 slugs/sec

RPM: 1200. STATION = 1.0

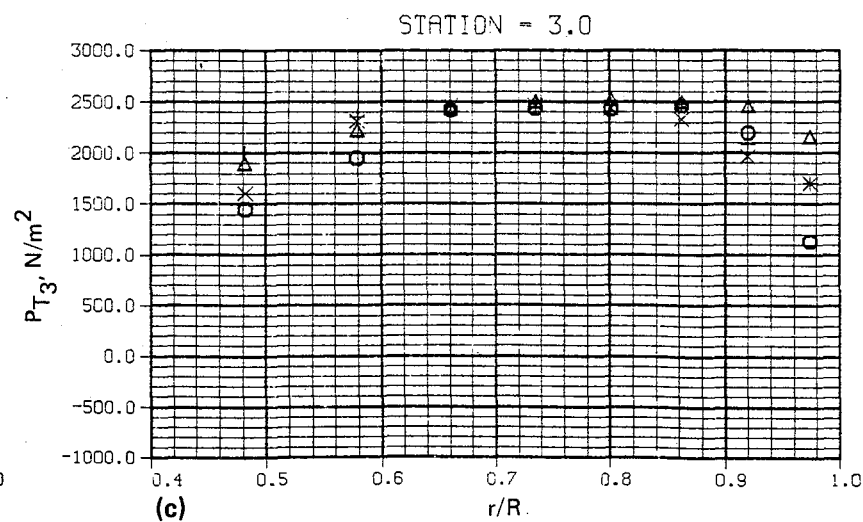
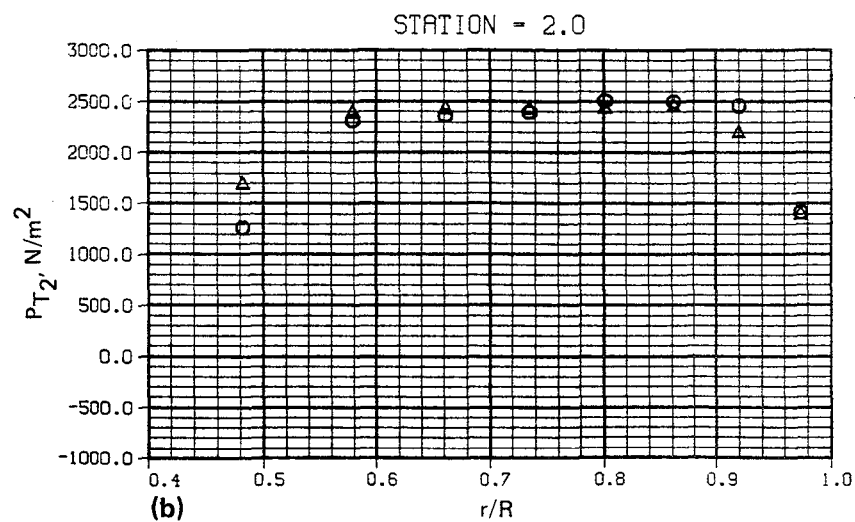
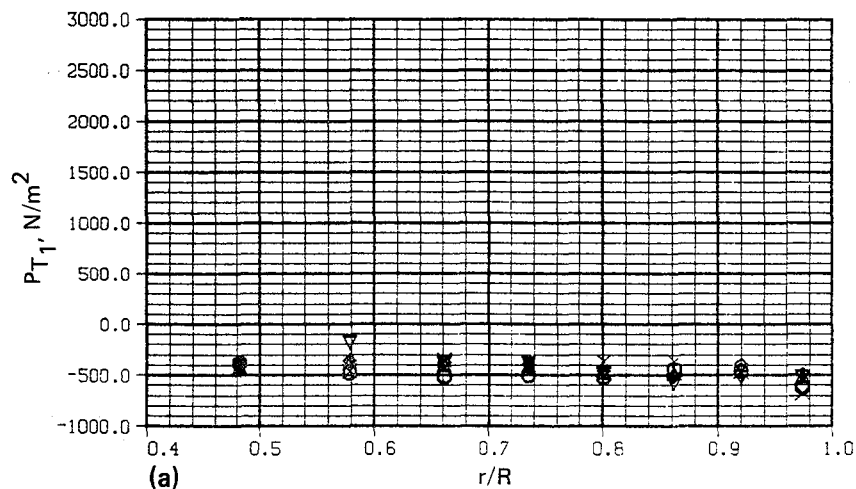


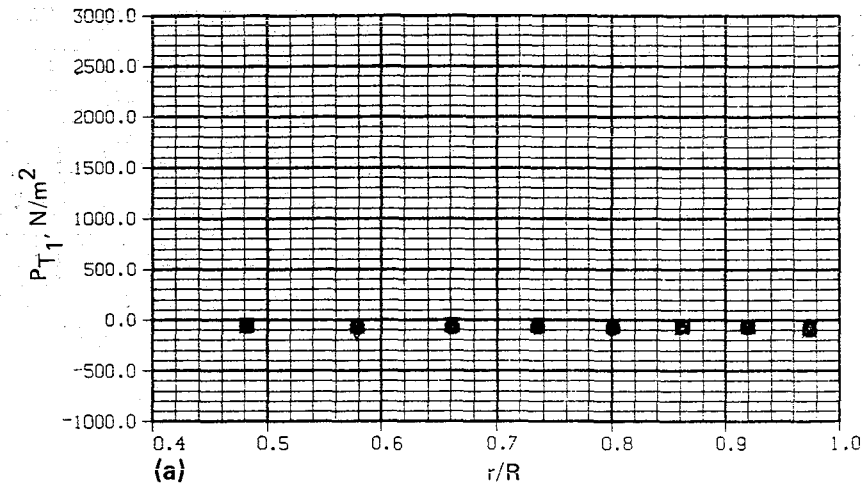
Figure D140.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

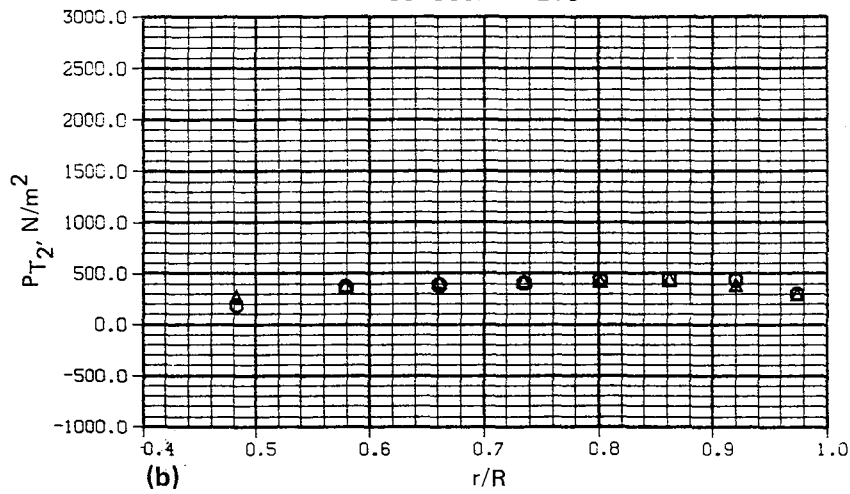
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 257. MASS FLOW: 60.23 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

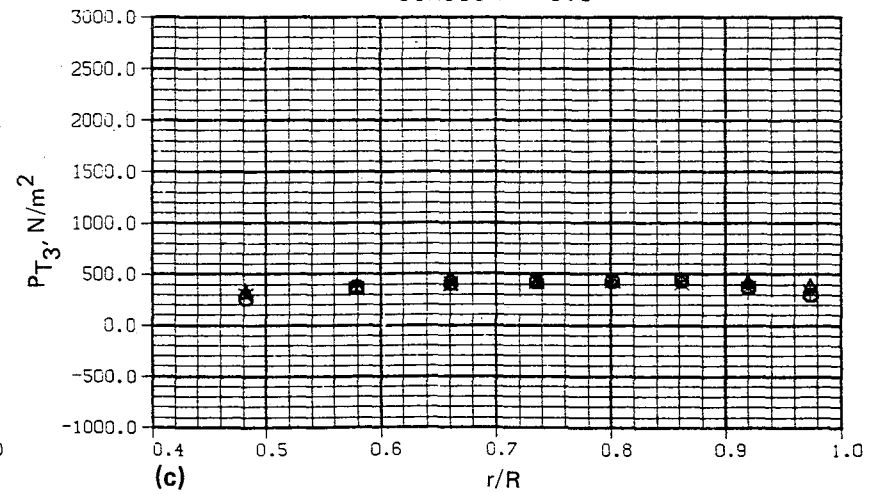


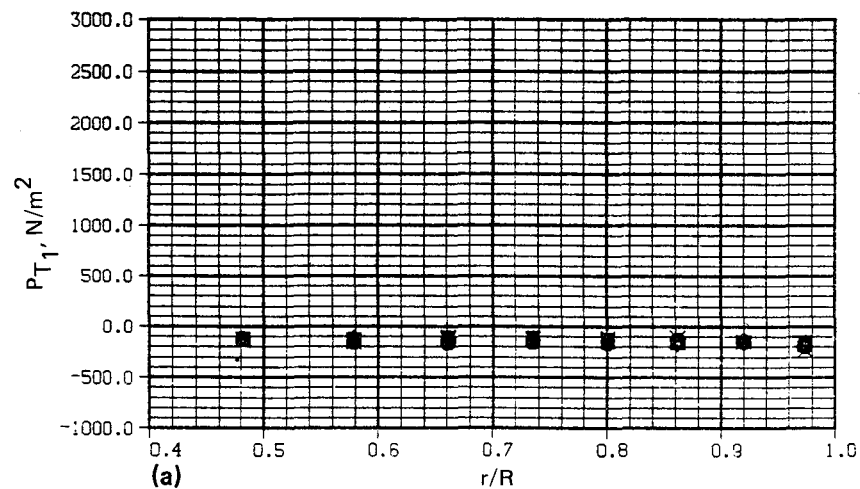
Figure D141.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

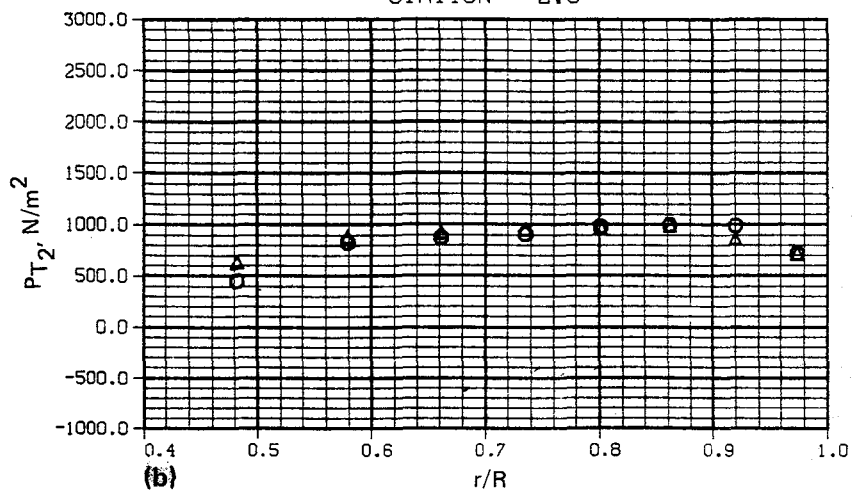
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 258. MASS FLOW: 91.07 slugs/sec

RPM: 721. STATION = 1.0



STATION = 2.0



STATION = 3.0

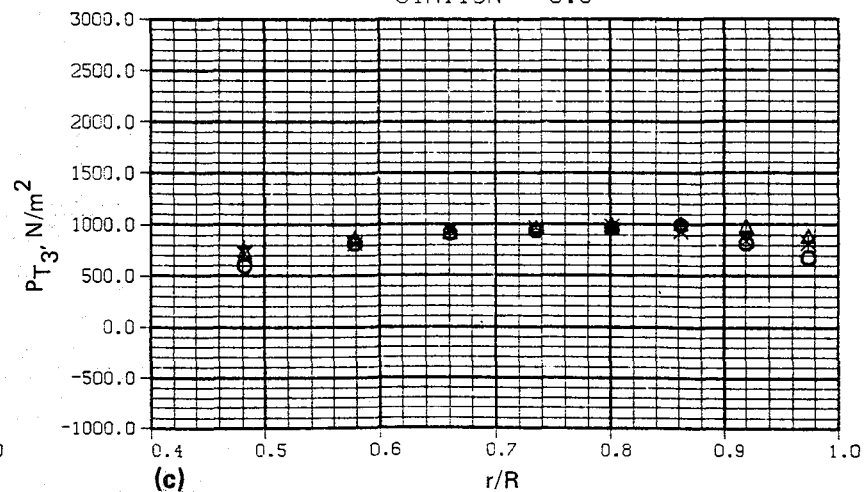
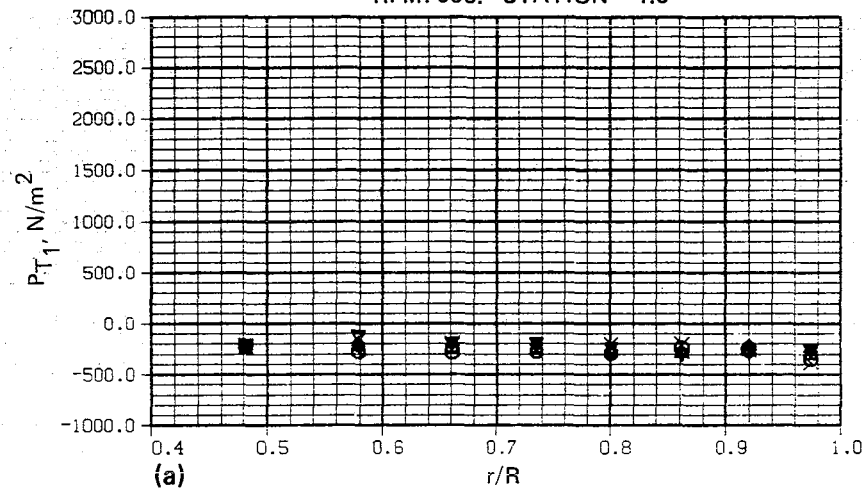
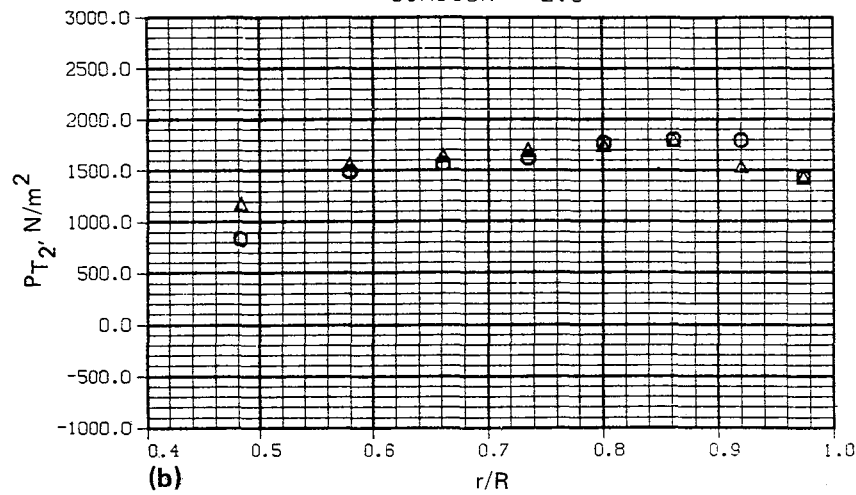


Figure D142.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 259. MASS FLOW: 123.10 slugs/sec
 RPM: 965. STATION = 1.0



STATION = 2.0



STATION = 3.0

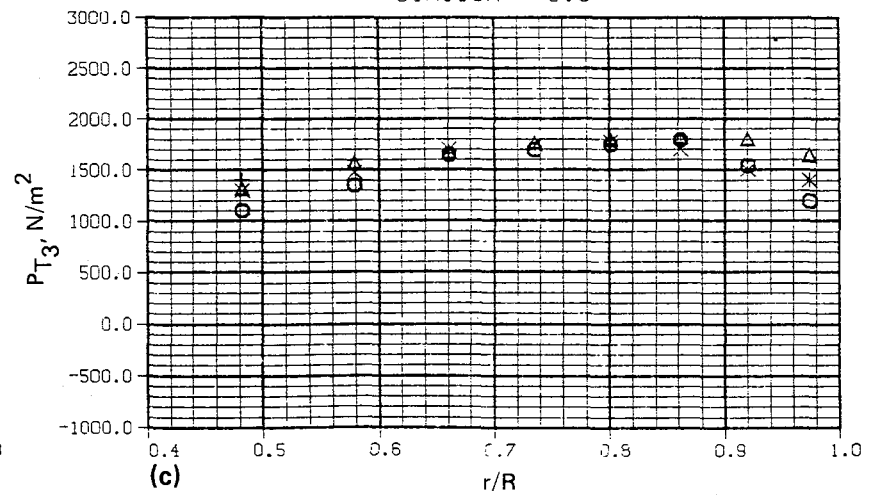


Figure D143.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 260. MASS FLOW: 154.00 slugs/sec

RPM: 1198. STATION = 1.0

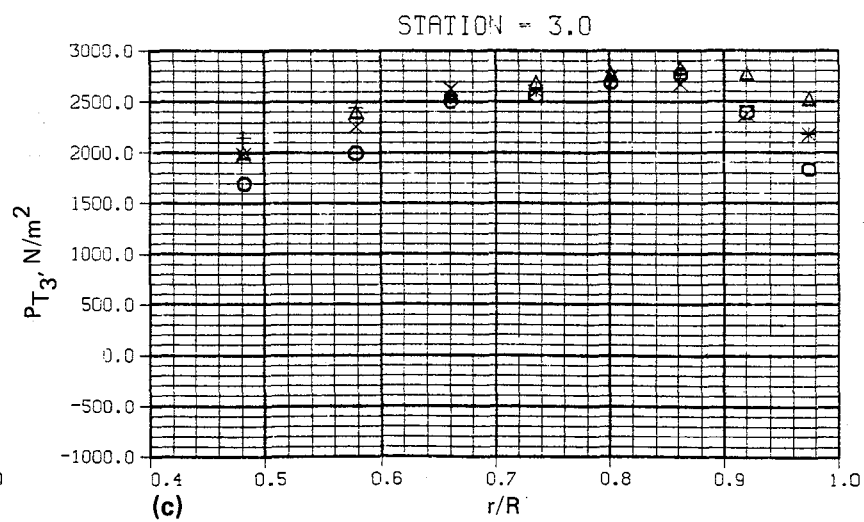
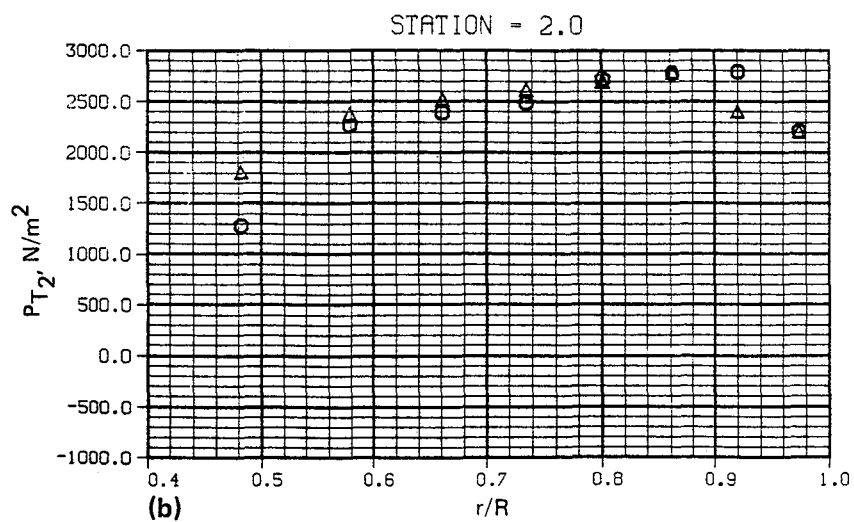
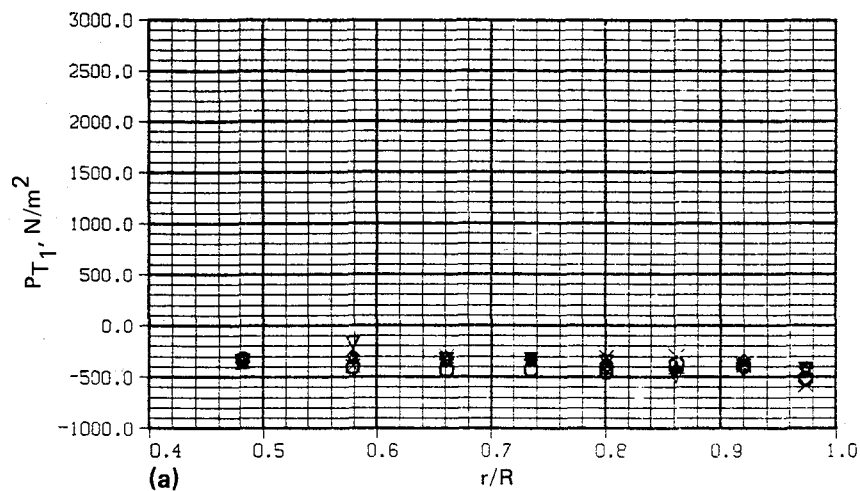


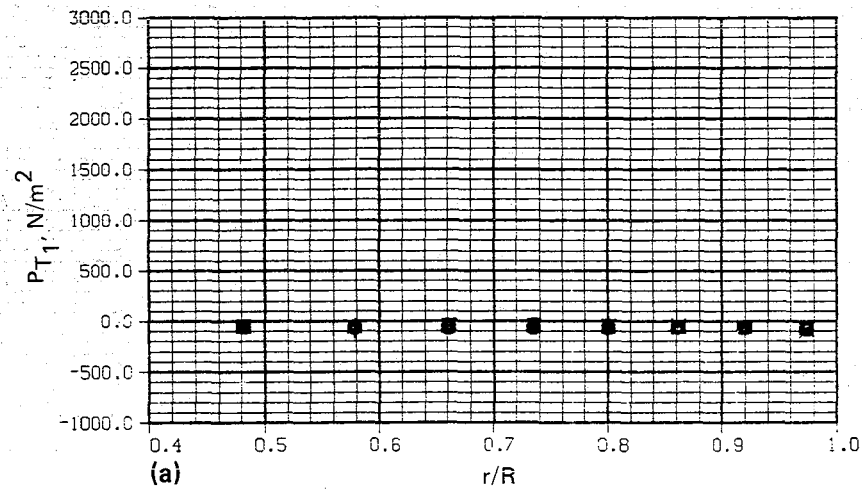
Figure D144.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

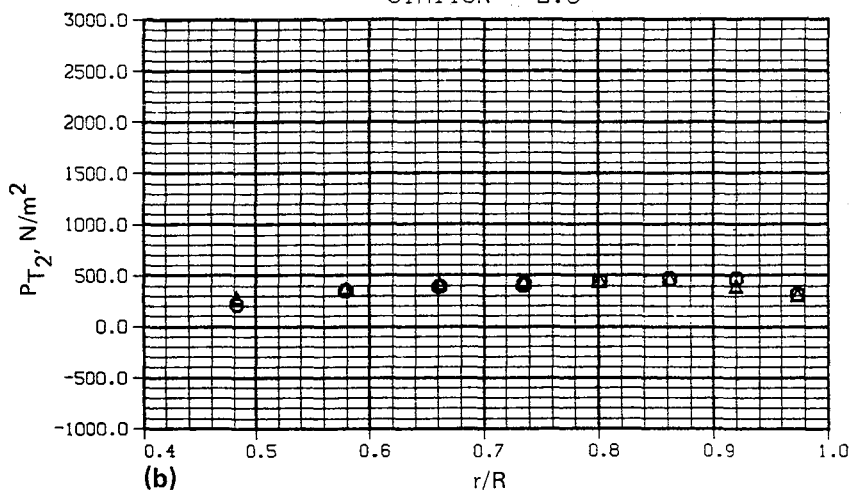
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 261. MASS FLOW: 55.95 slugs/sec

RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

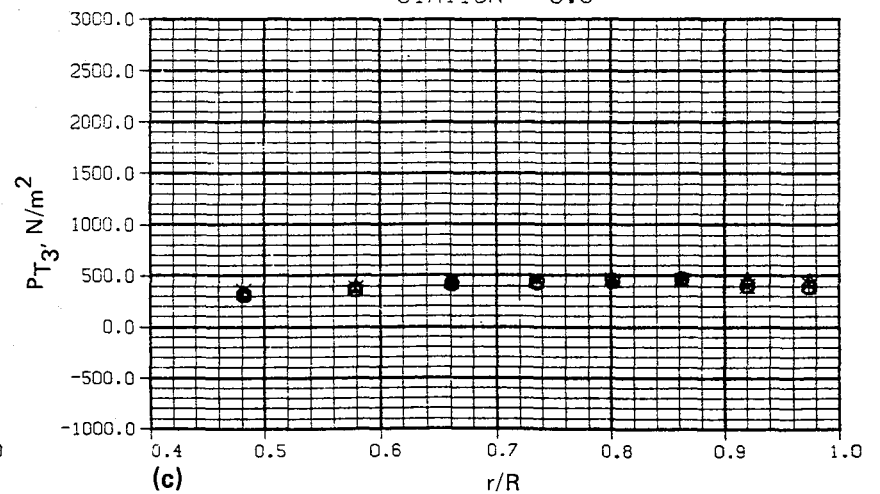


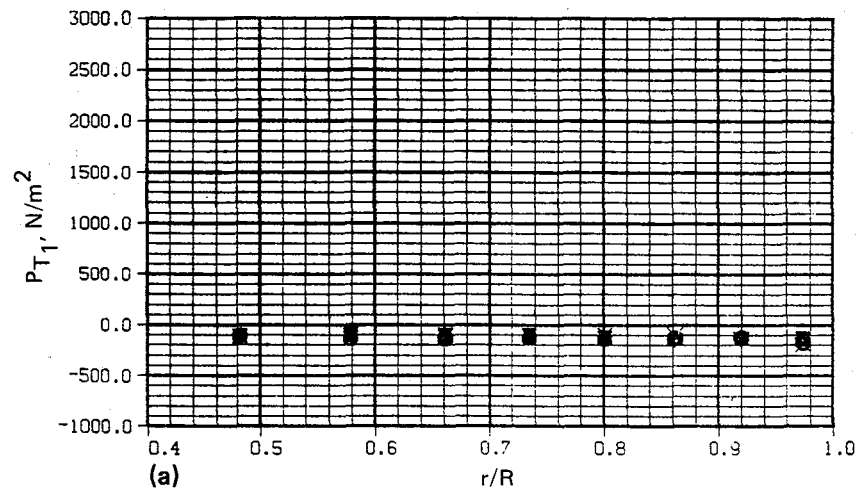
Figure D145.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

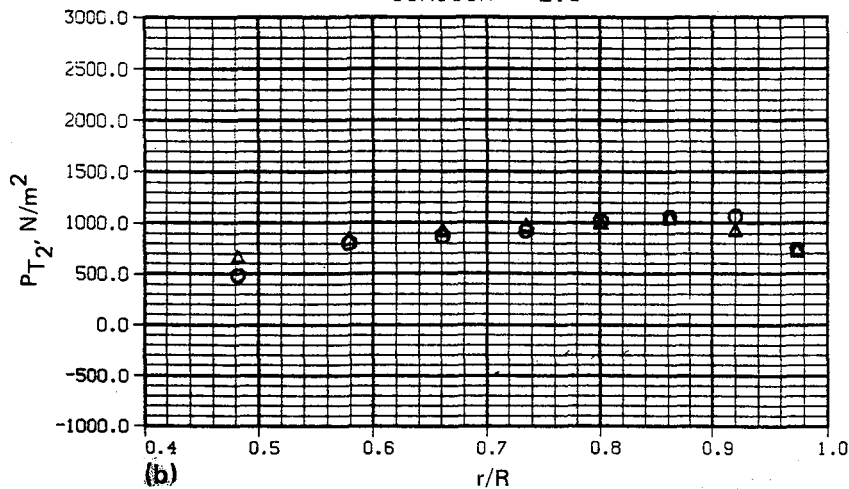
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 262. MASS FLOW: 84.89 slugs/sec

RPM: 721. STATION = 1.0



STATION - 2.0



STATION - 3.0

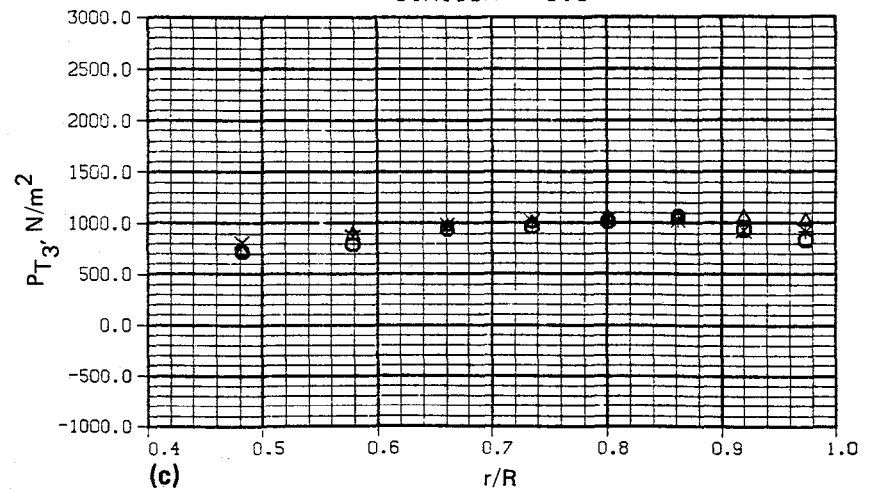


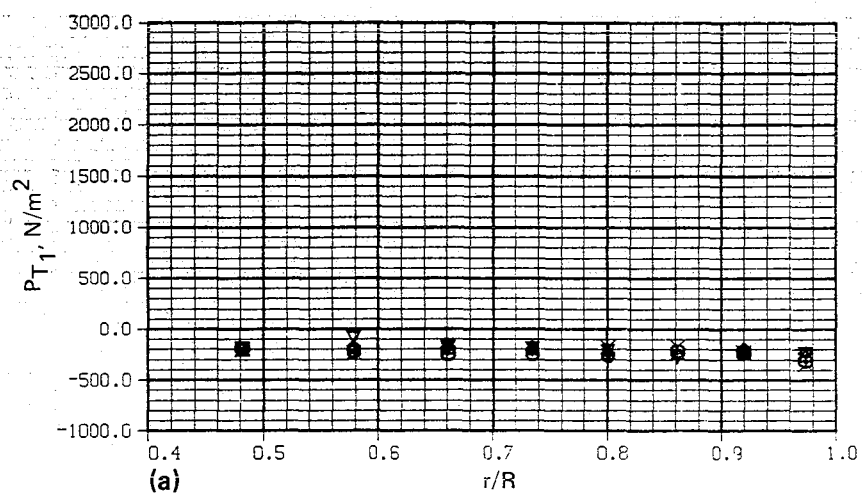
Figure D146.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

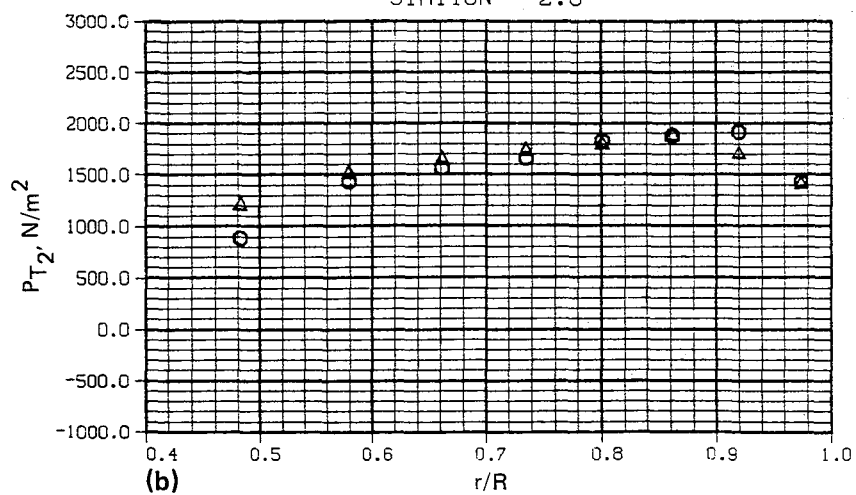
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 263. MASS FLOW: 114.86 slugs/sec

RPM: 964. STATION = 1.0



STATION = 2.0



STATION = 3.0

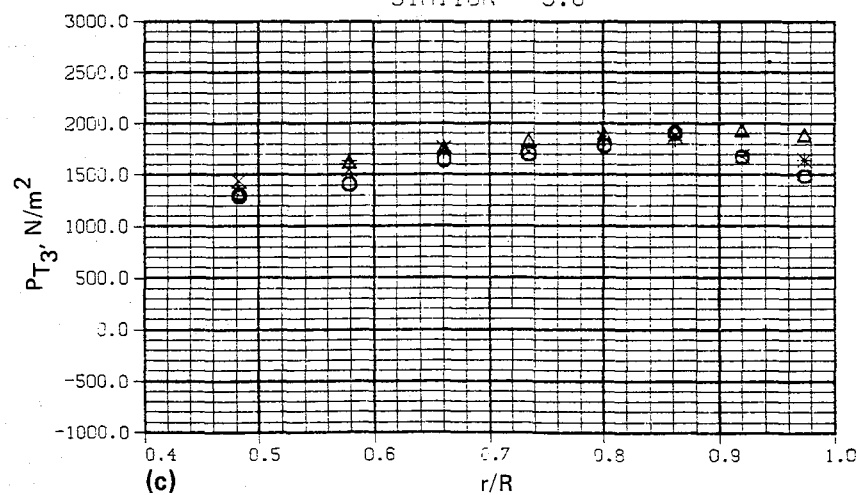


Figure D147.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 264. MASS FLOW: 144.83 slugs/sec

RPM: 1203. STATION = 1.0

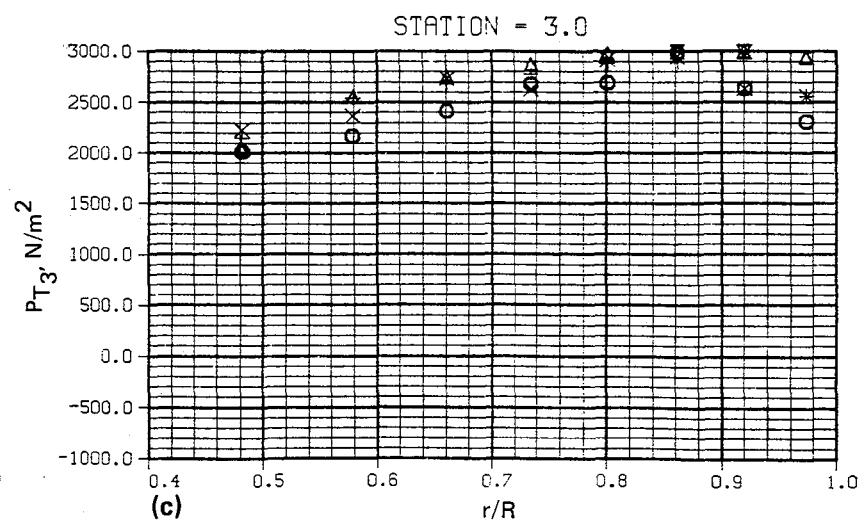
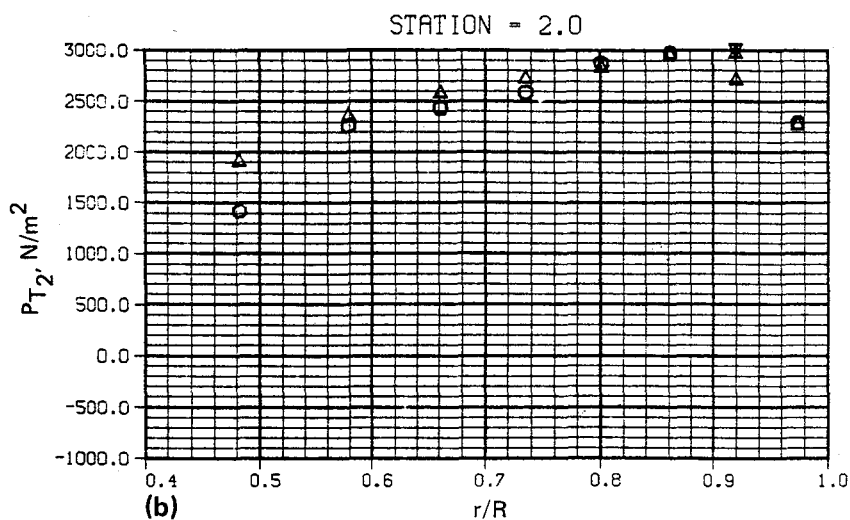
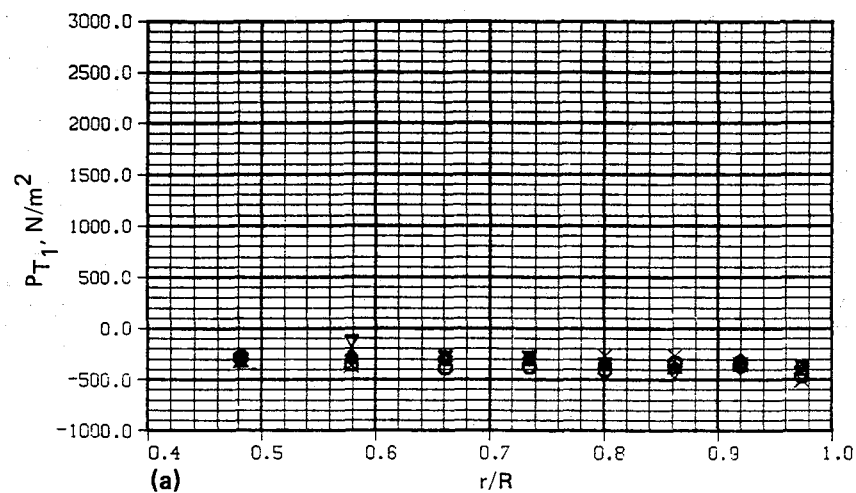
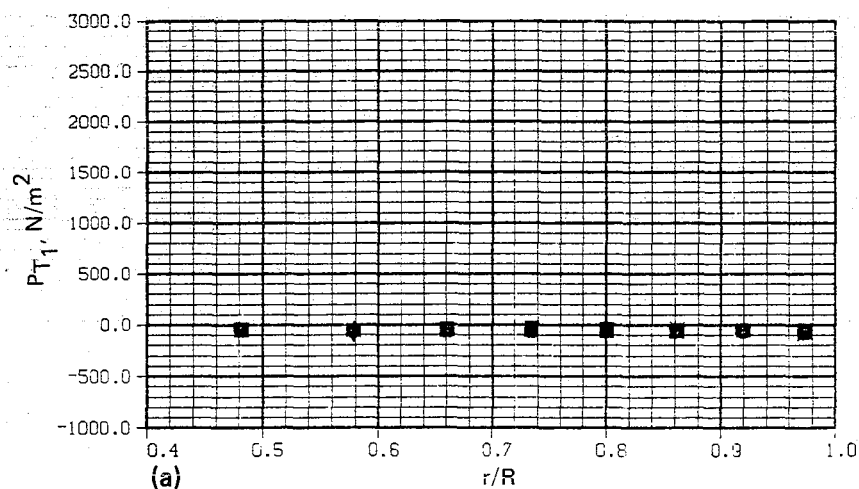
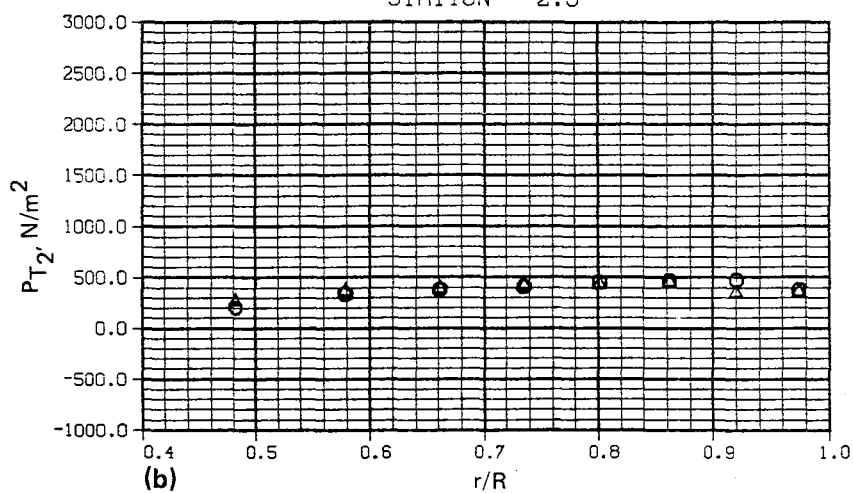


Figure D148.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 265. MASS FLOW: 52.24 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

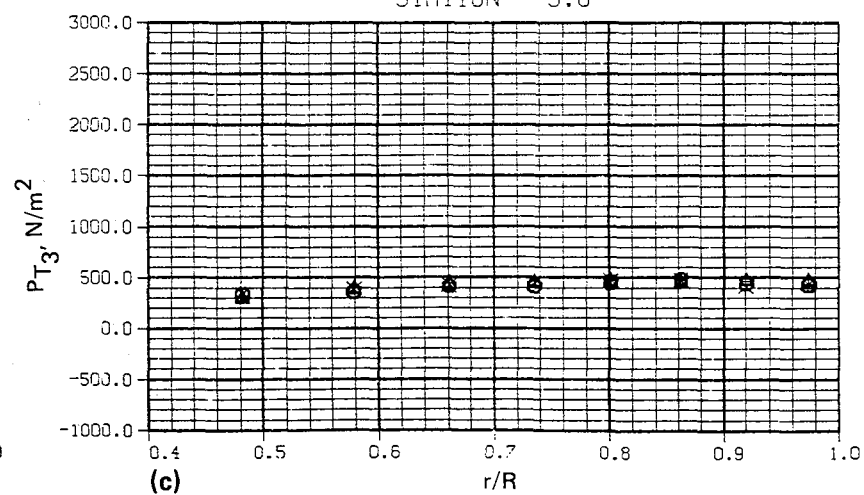


Figure D149.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 266. MASS FLOW: 79.66 slugs/sec

RPM: 719. STATION = 1.0

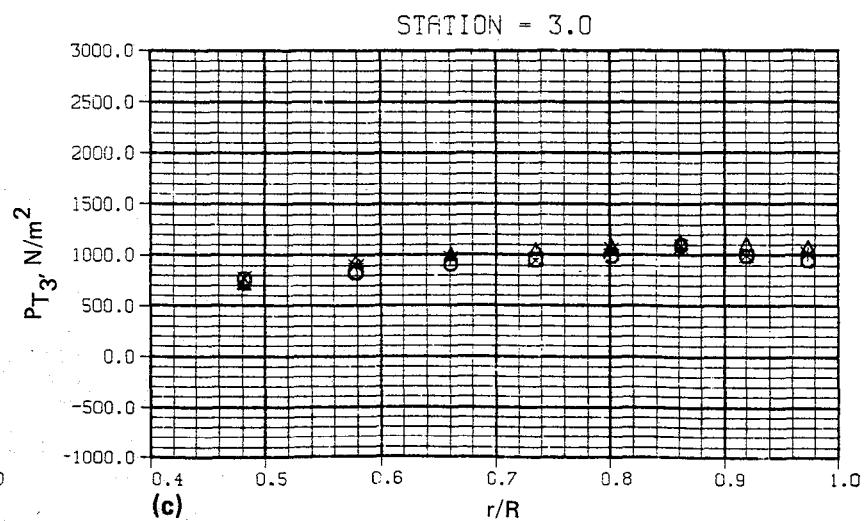
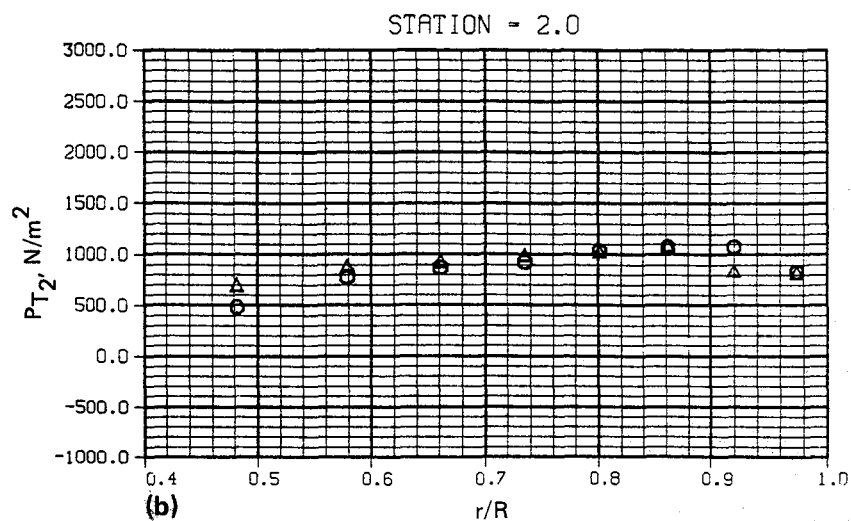
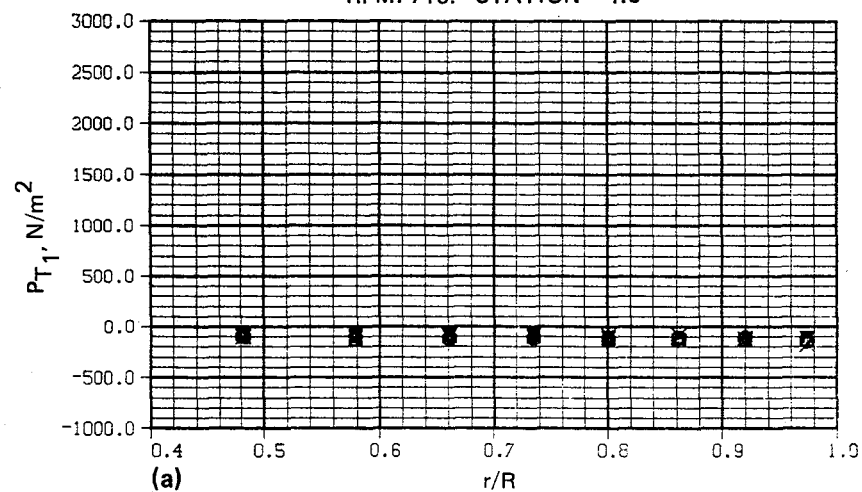


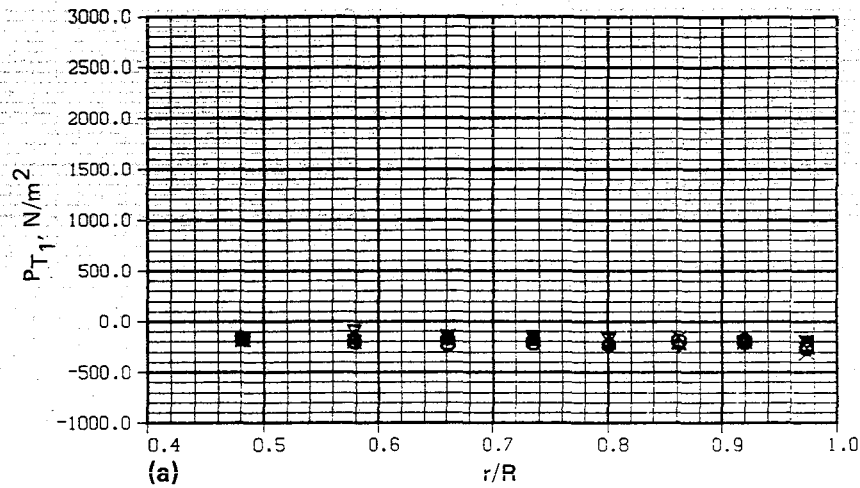
Figure D150.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

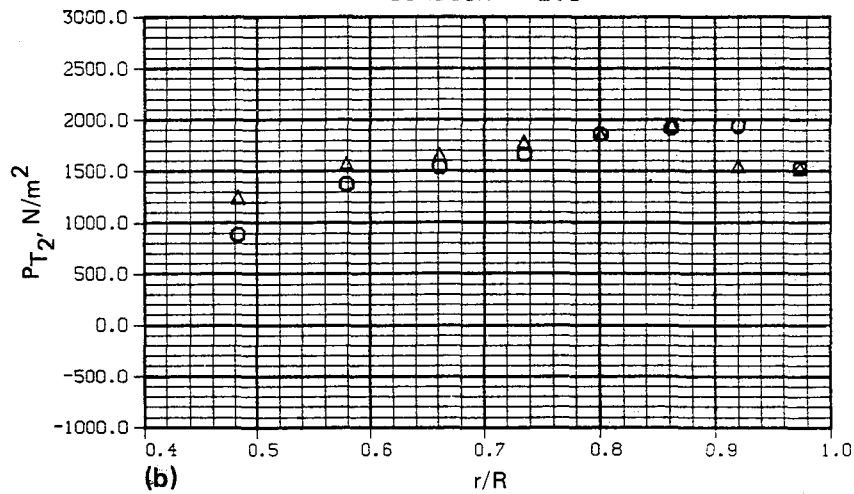
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 267. MASS FLOW: 107.48 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

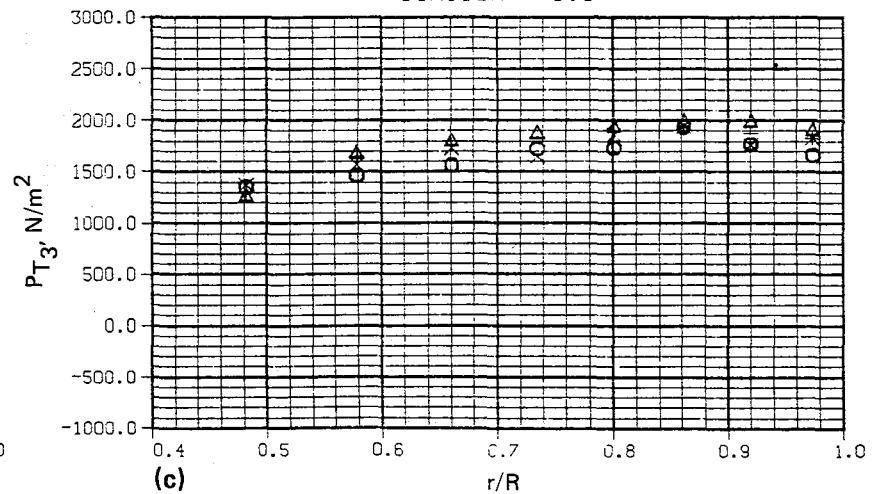


Figure D151.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 268. MASS FLOW: 136.12 slugs/sec

RPM:1204 STATION = 1.0

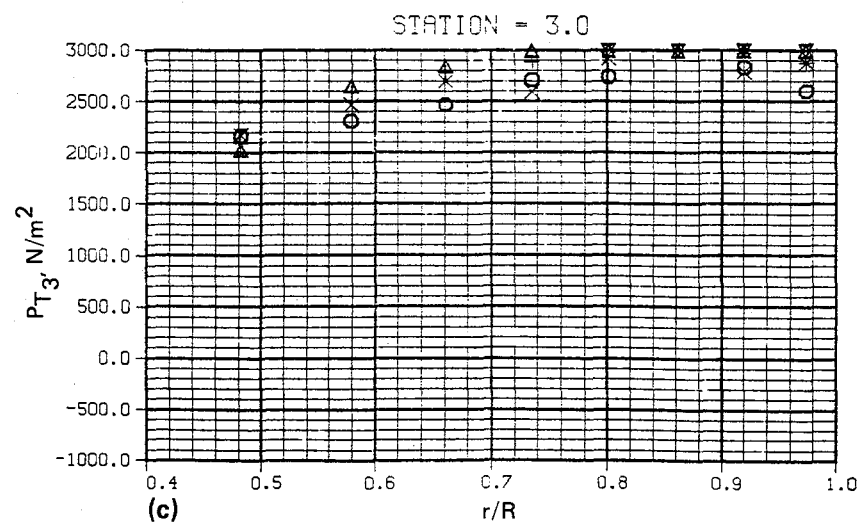
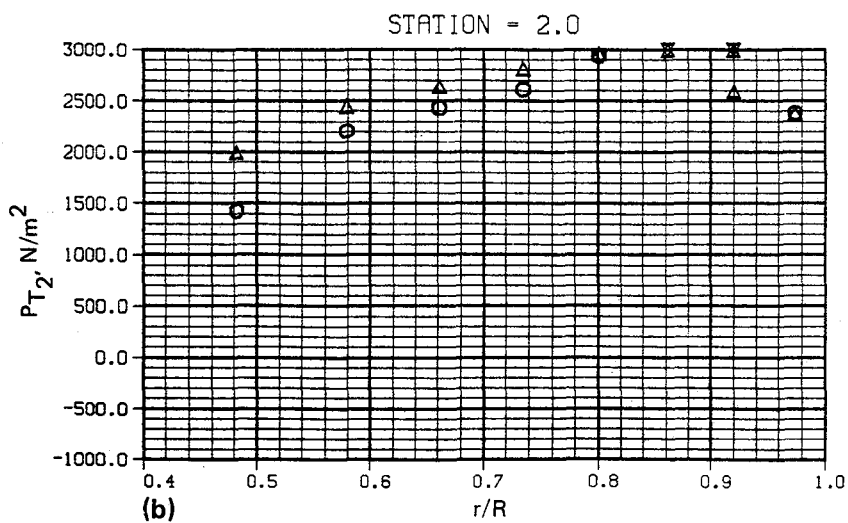
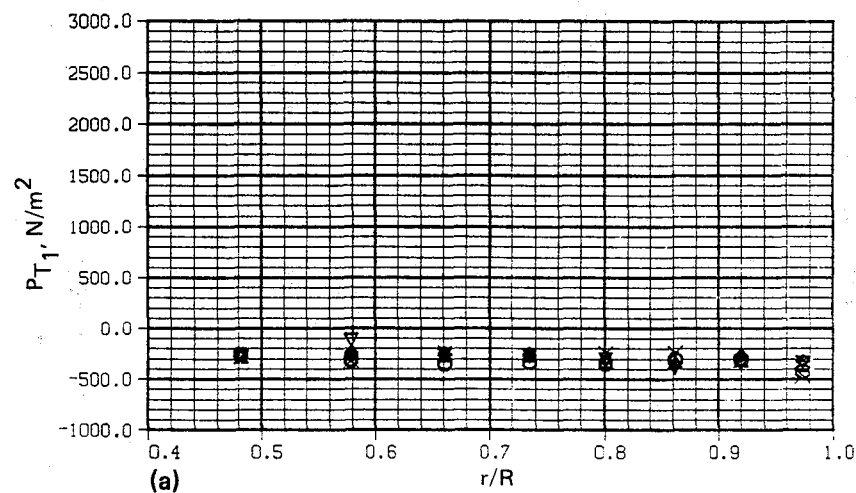
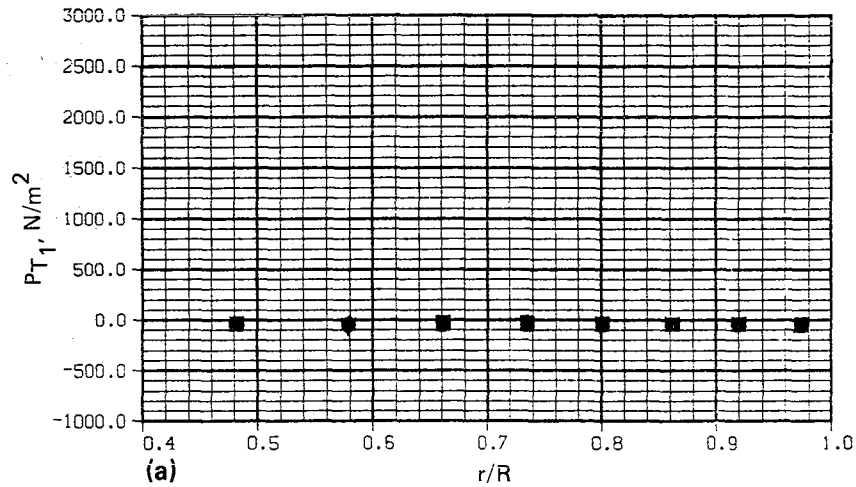
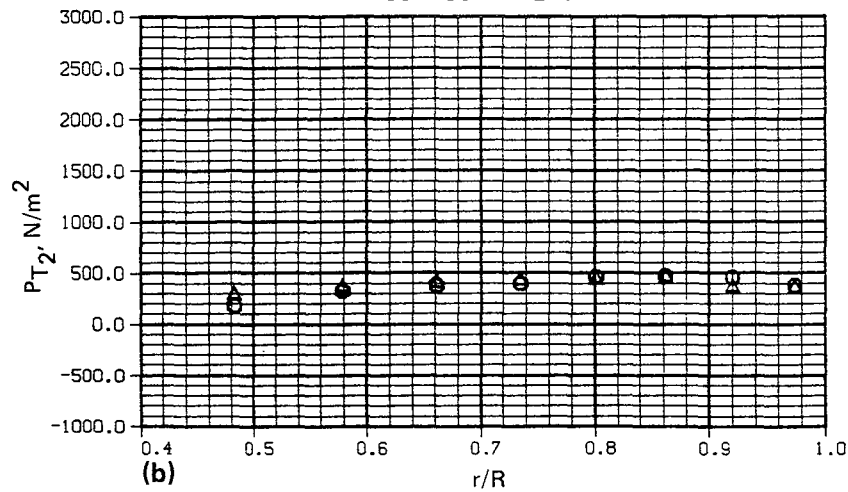


Figure D152.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 269. MASS FLOW: 45.11 slugs/sec
 RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

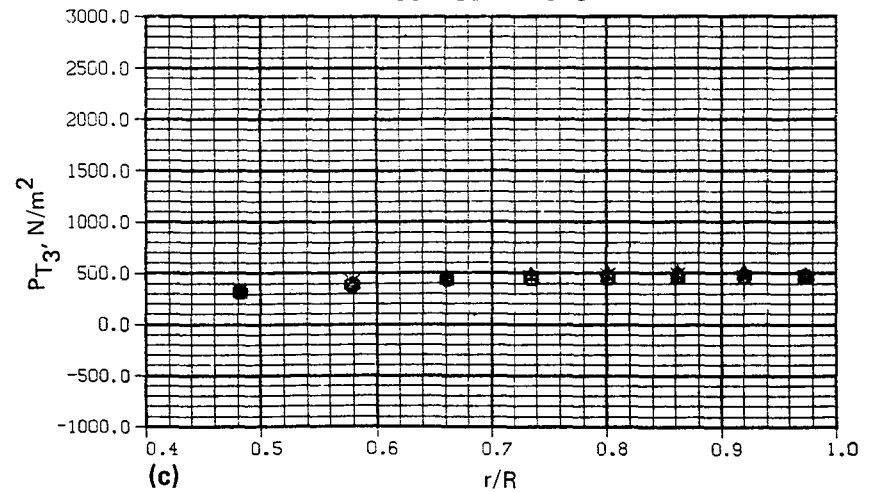


Figure D153.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 270. MASS FLOW: 69.13 slugs/sec

RPM: 720. STATION = 1.0

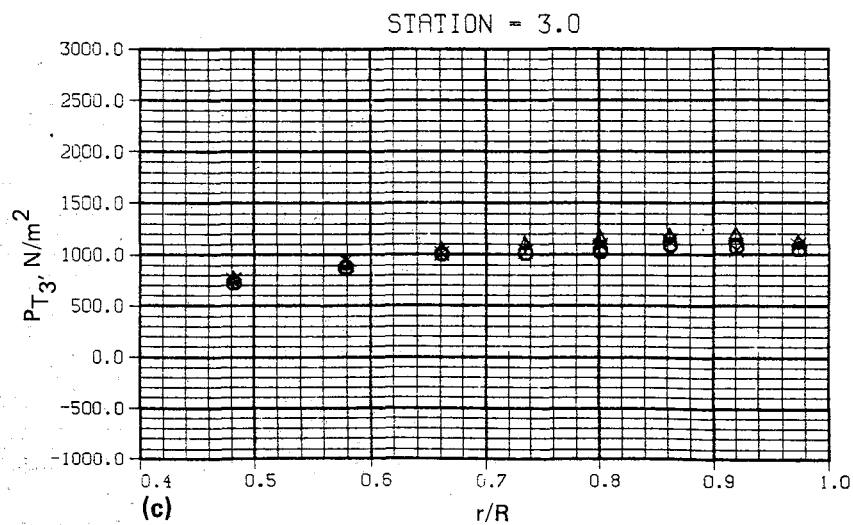
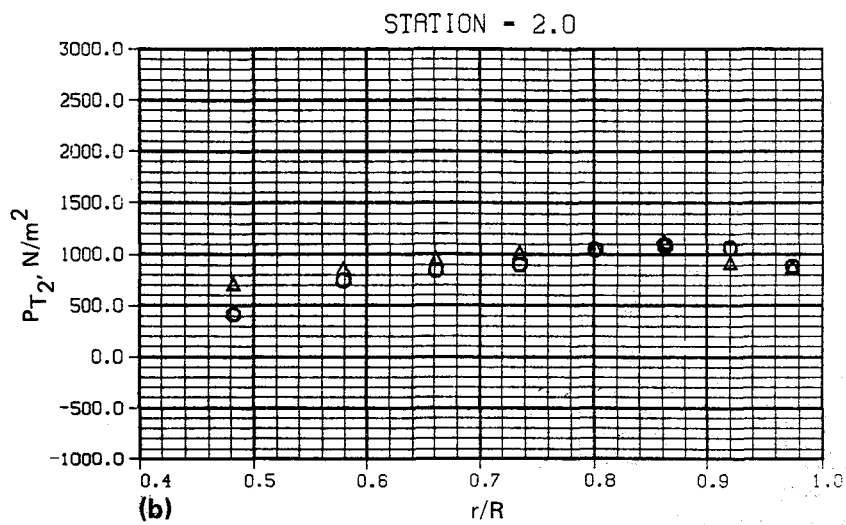
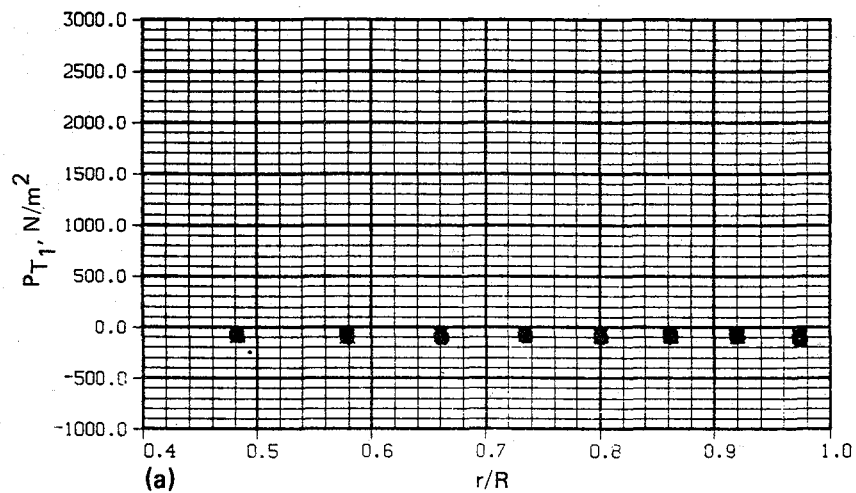


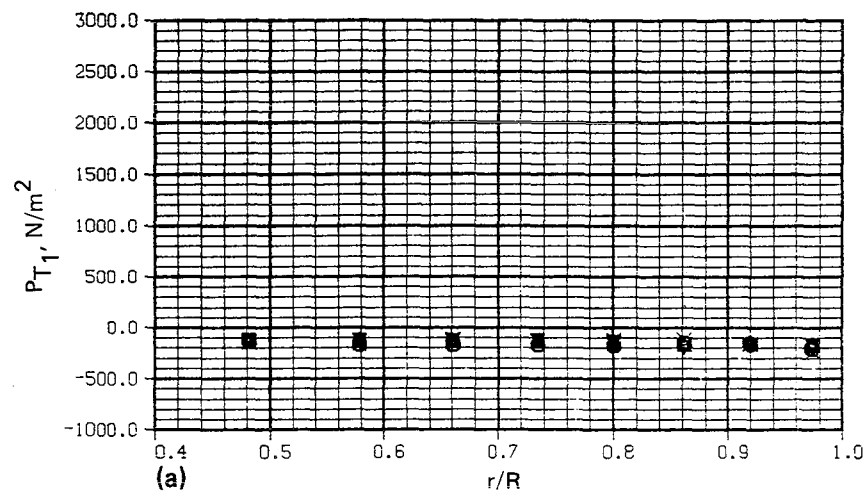
Figure D154.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

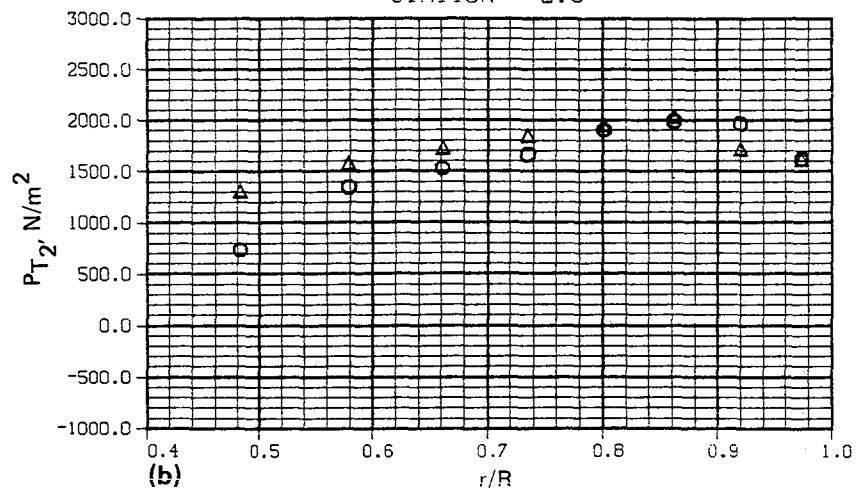
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 271. MASS FLOW: 94.35 slugs/sec

RPM: 963. STATION = 1.0



STATION = 2.0



STATION = 3.0

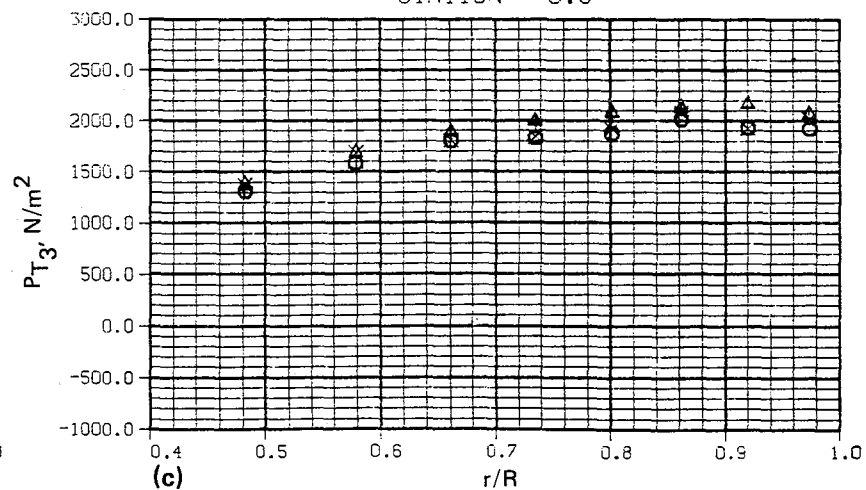


Figure D155.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 272. MASS FLOW: 119.34 slugs/sec

RPM: 1198. STATION = 1.0

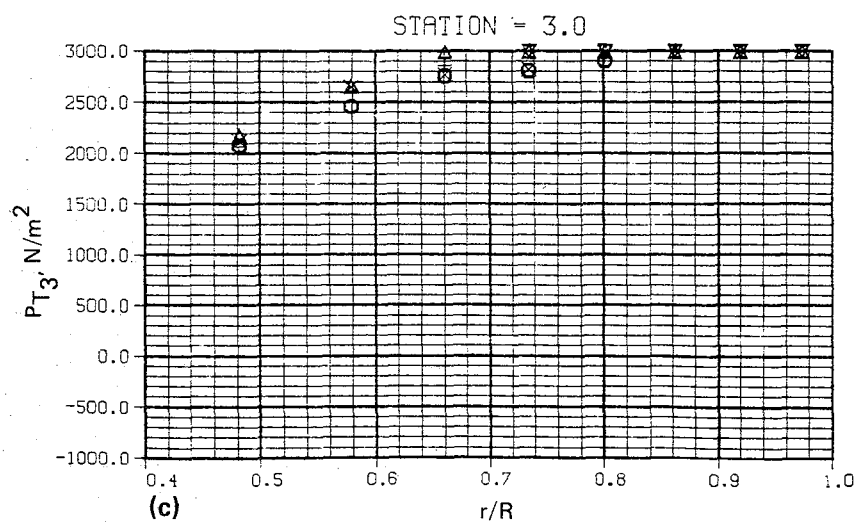
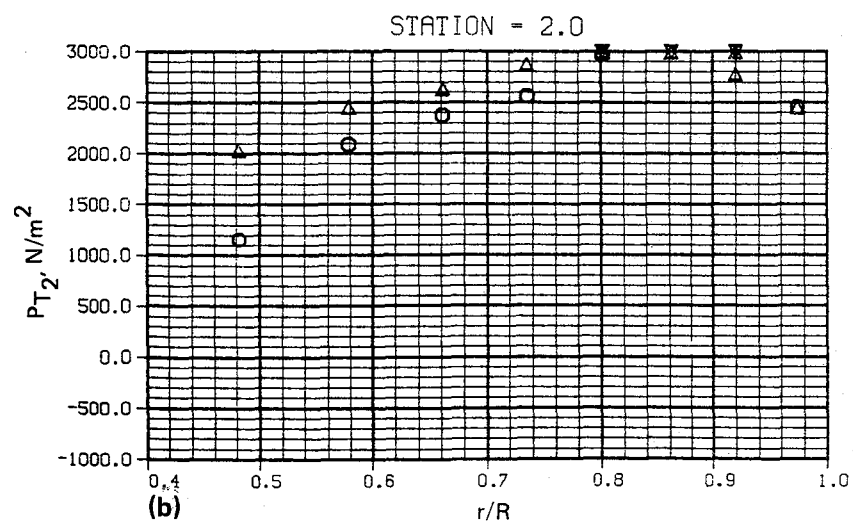
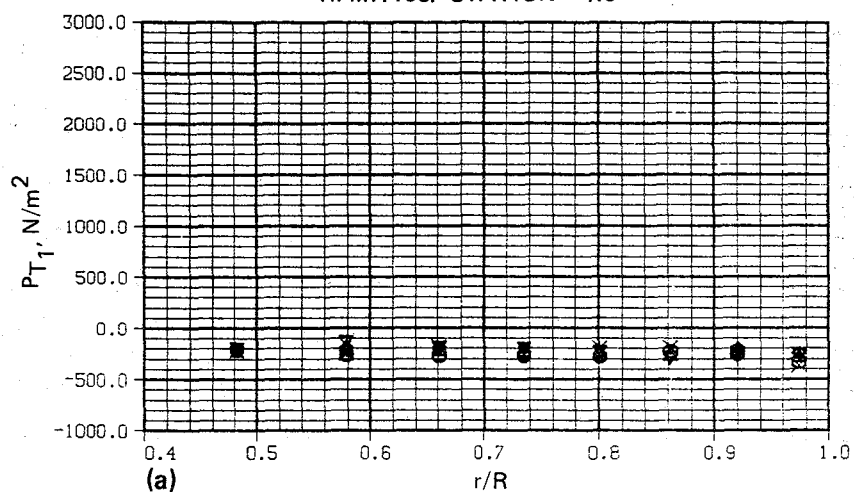
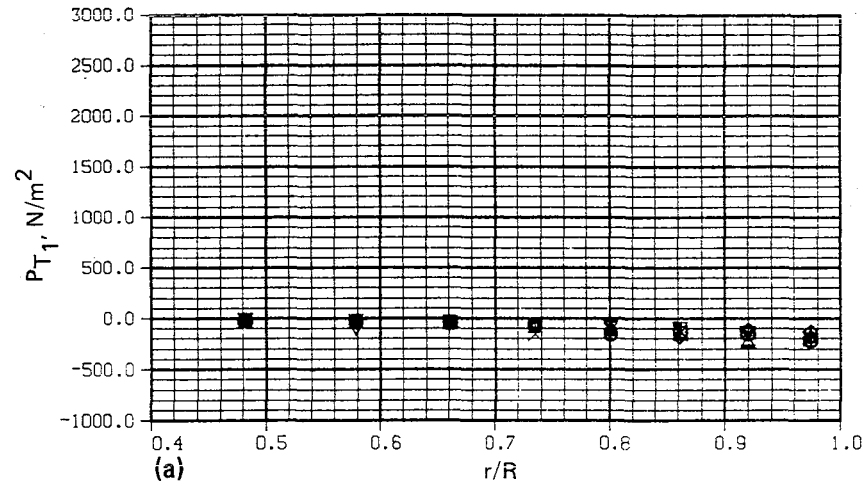
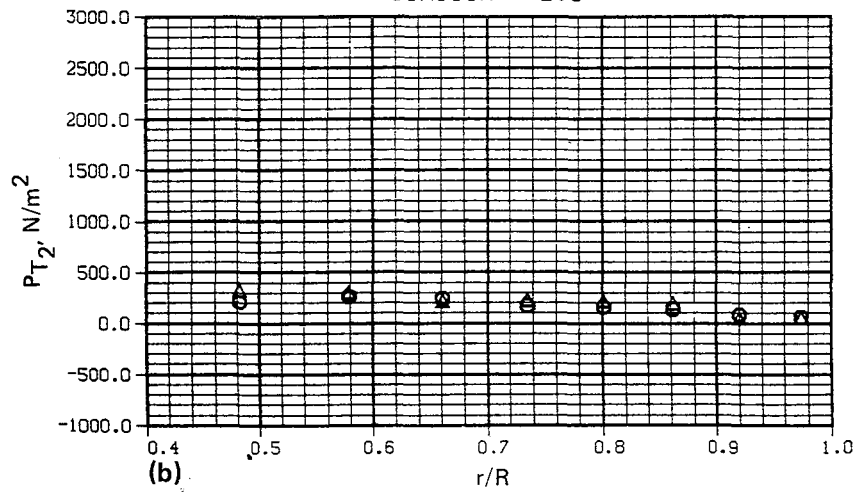


Figure D156.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 273. MASS FLOW: 23.51 slugs/sec
 RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

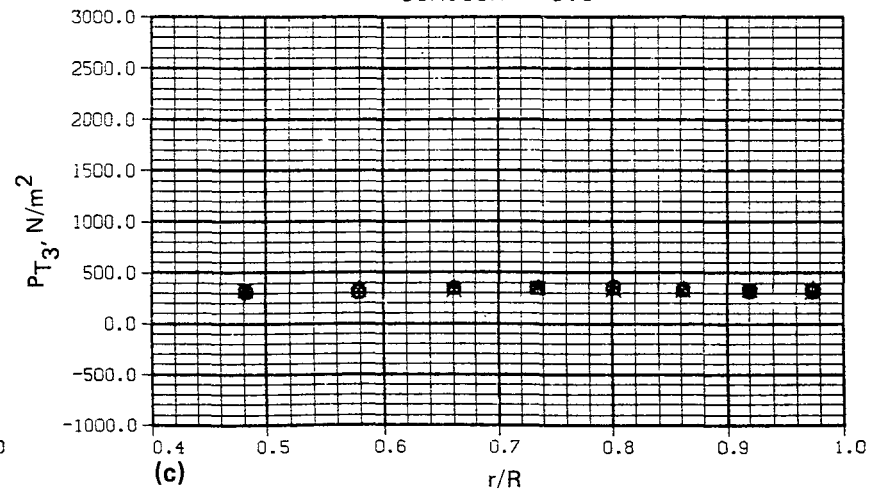


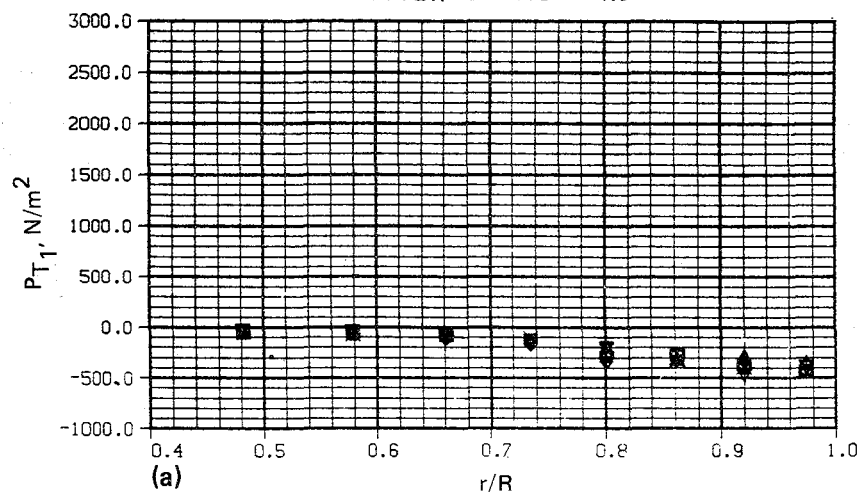
Figure D157.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

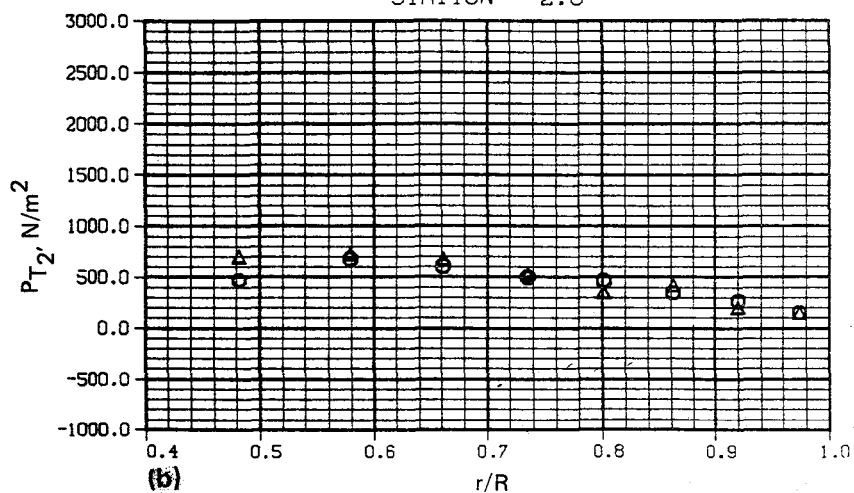
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 274, MASS FLOW: 34.57 slugs/sec

RPM: 721, STATION = 1.0



STATION = 2.0



STATION = 3.0

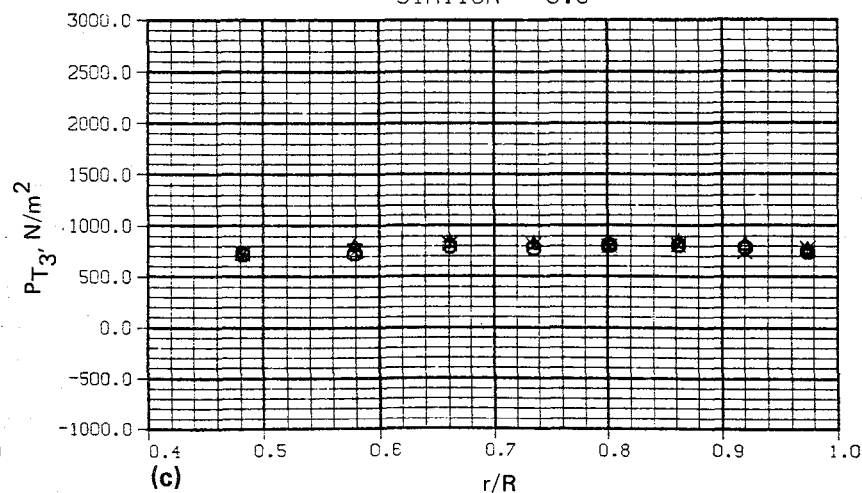


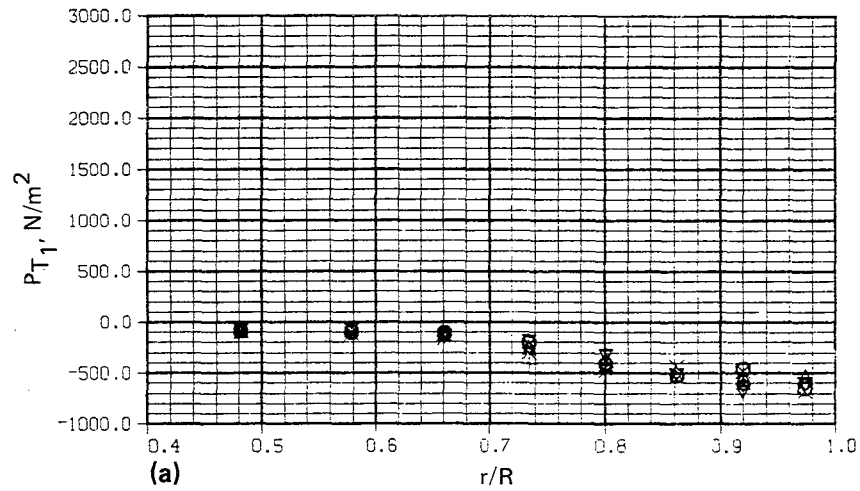
Figure D158.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

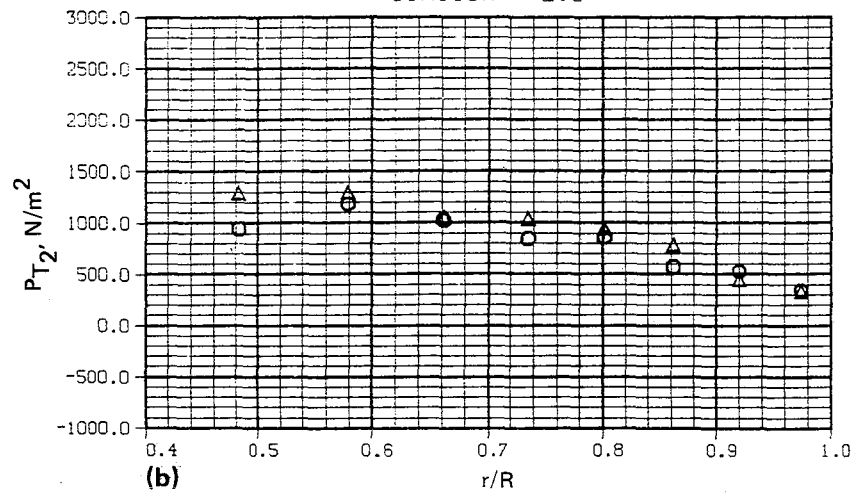
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 275. MASS FLOW: 55.76 slugs/sec

RPM: 963. STATION = 1.0



STATION = 2.0



STATION = 3.0

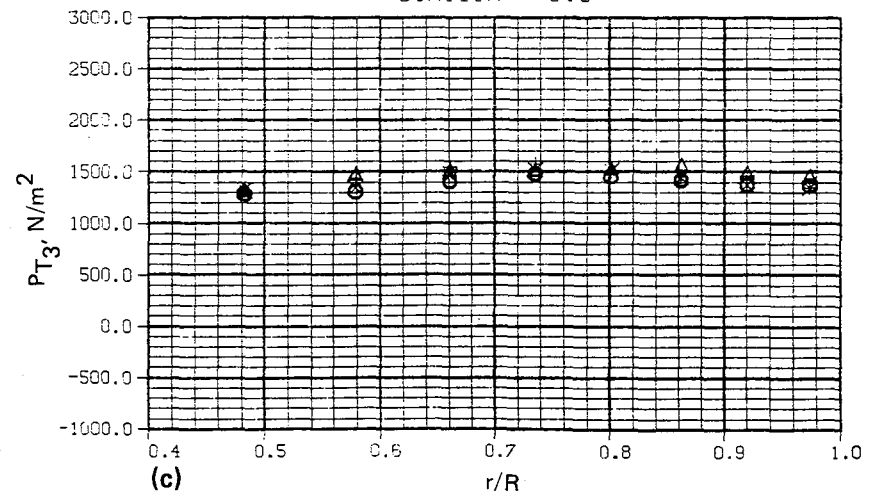


Figure D159.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 276. MASS FLOW: 75.59 slugs/sec

RPM: 1205. STATION = 1.0

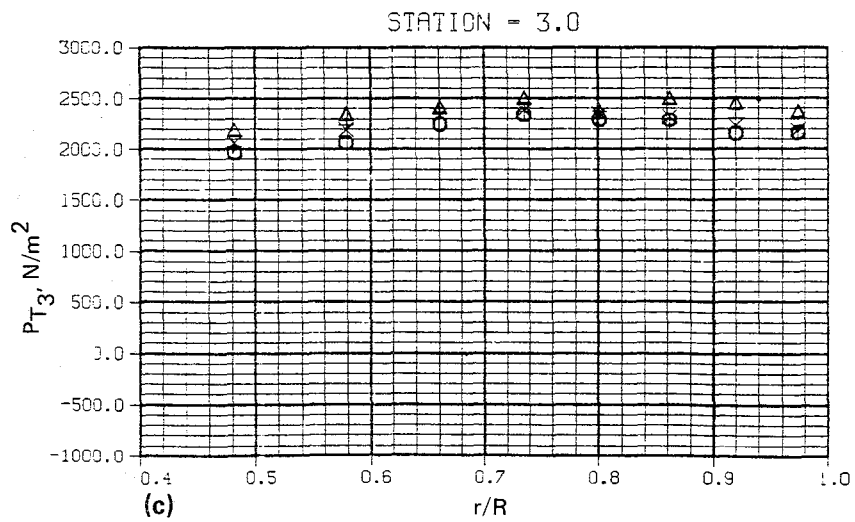
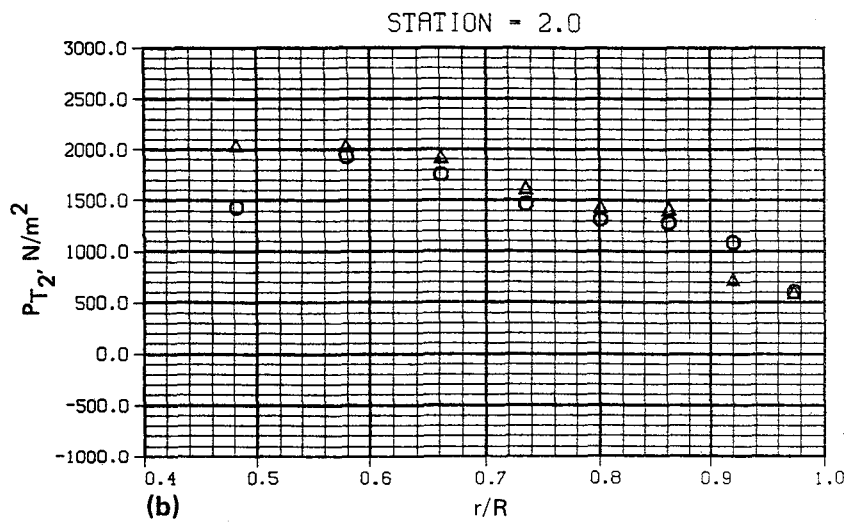
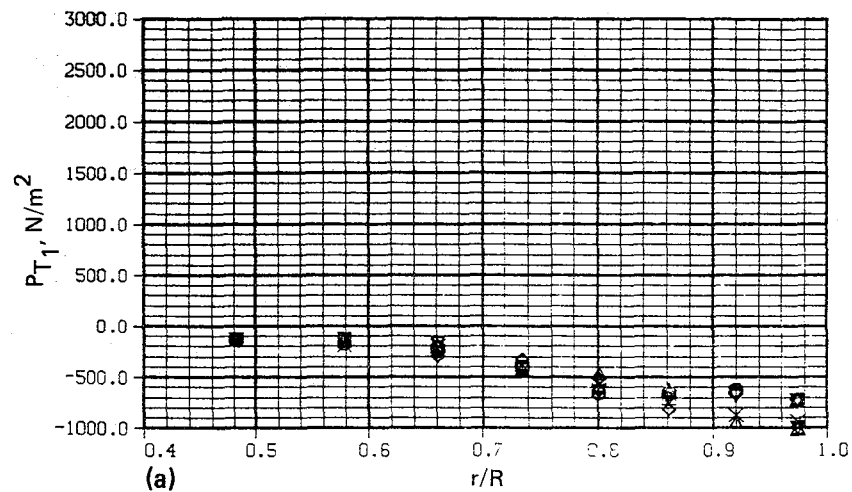
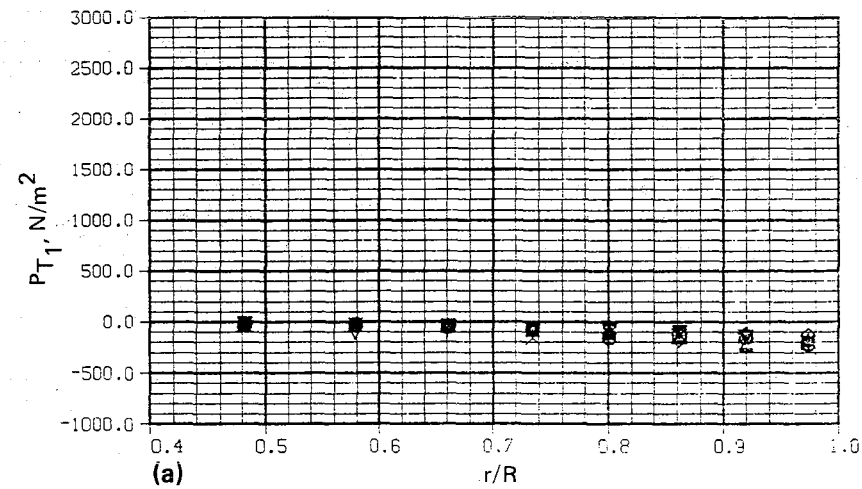
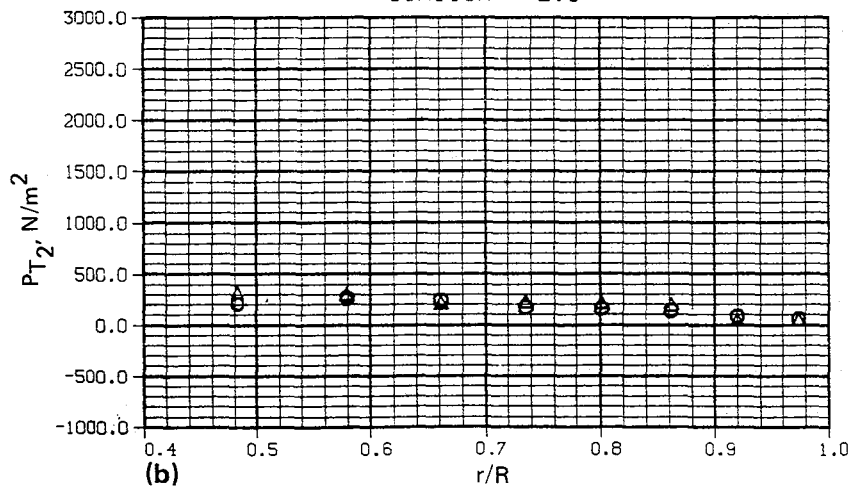


Figure D160.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 273. MASS FLOW: 23.51 slugs/sec
 RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

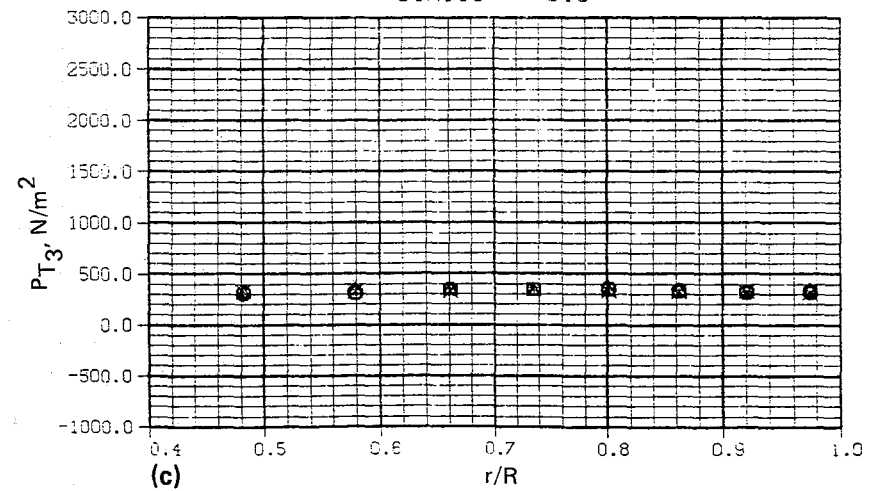


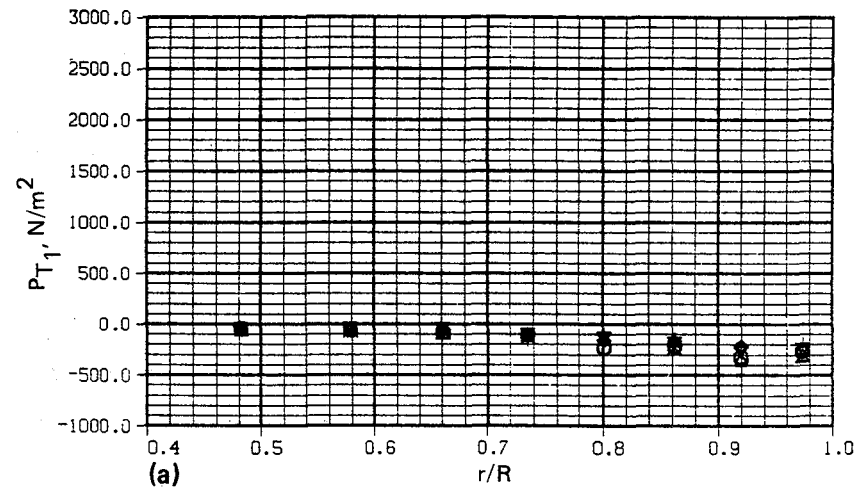
Figure D161.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

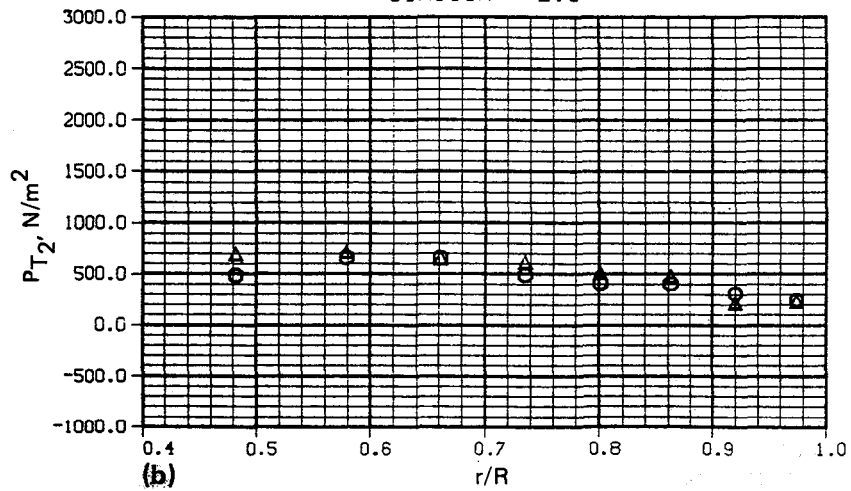
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 278. MASS FLOW: 49.30 slugs/sec

RPM: 718. STATION = 1.0



STATION - 2.0



STATION - 3.0

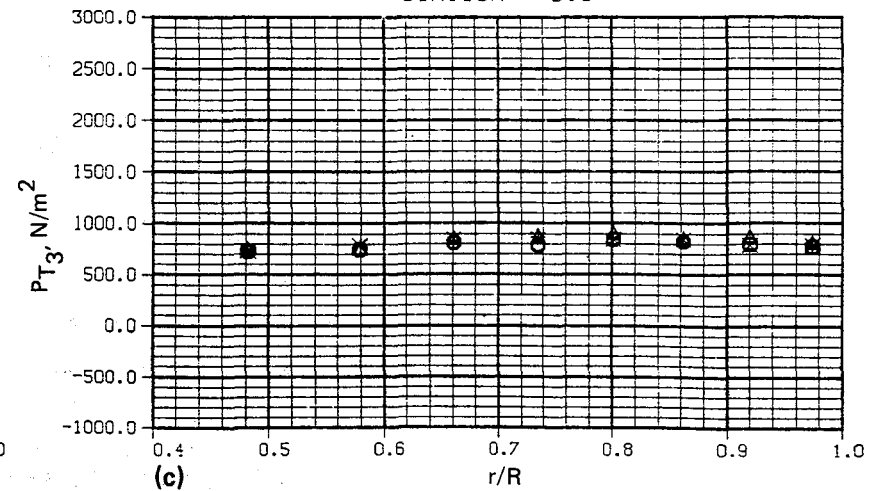
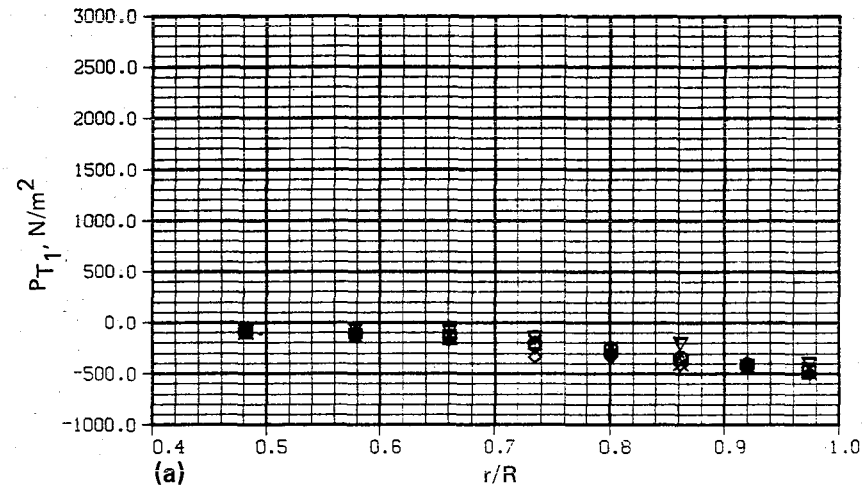
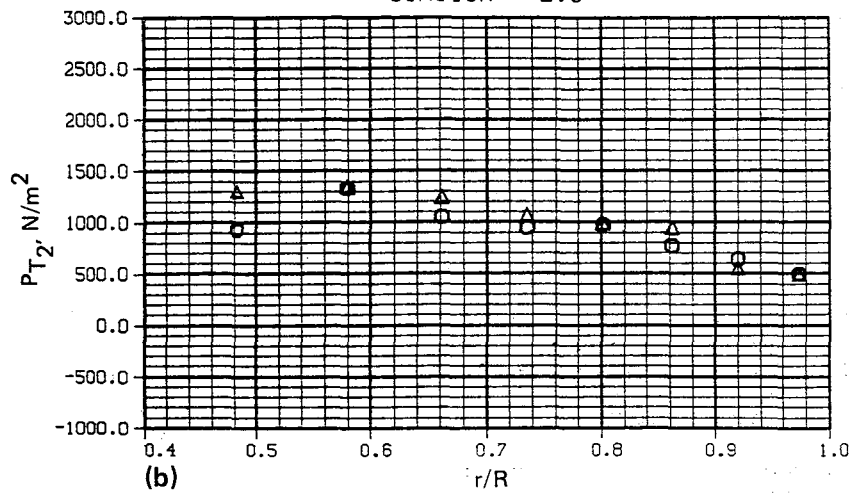


Figure D162.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 43.5
 RUN NO: 279. MASS FLOW: 68.54 slugs/sec
 RPM: 963. STATION = 1.0



STATION = 2.0



STATION = 3.0

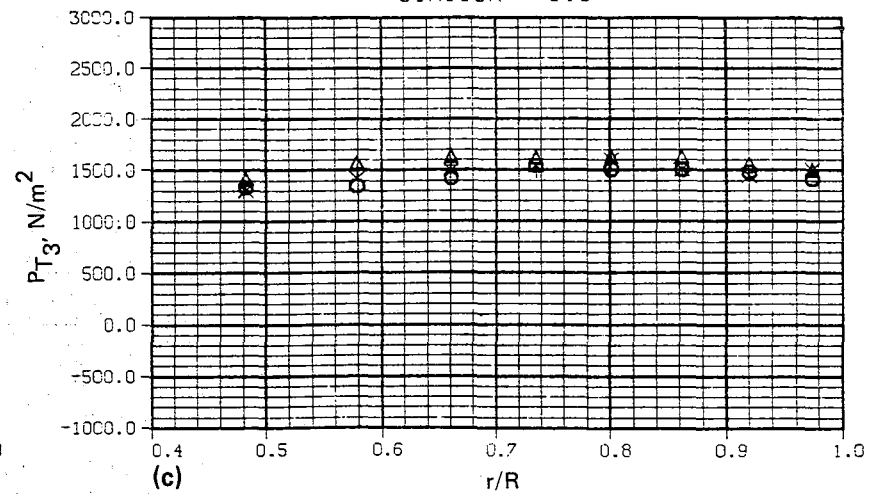


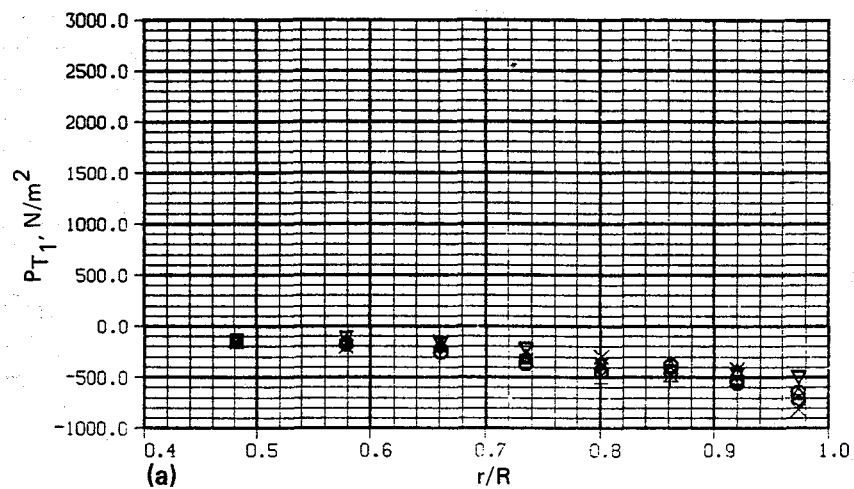
Figure D163.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

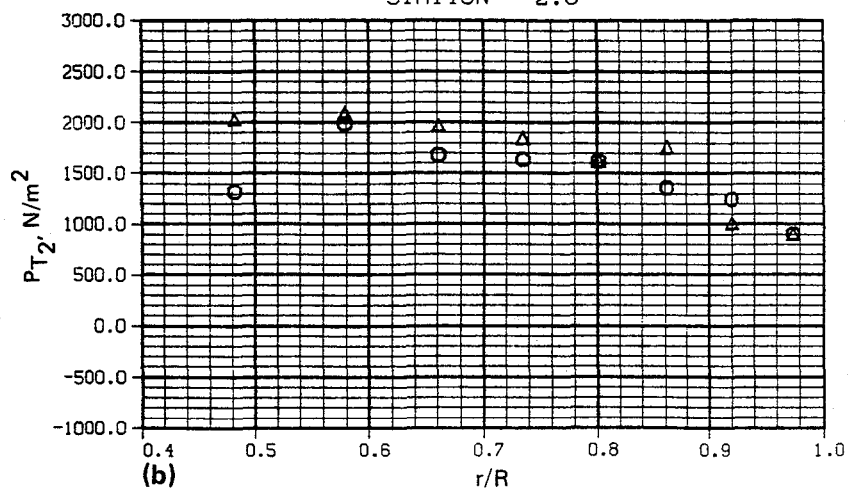
BLADE TYPE: 2. BLADE ANGLE: 43.5

RUN NO: 280 MASS FLOW: 93.20 slugs/sec

RPM: 1204. STATION = 1.0



STATION = 2.0



STATION = 3.0

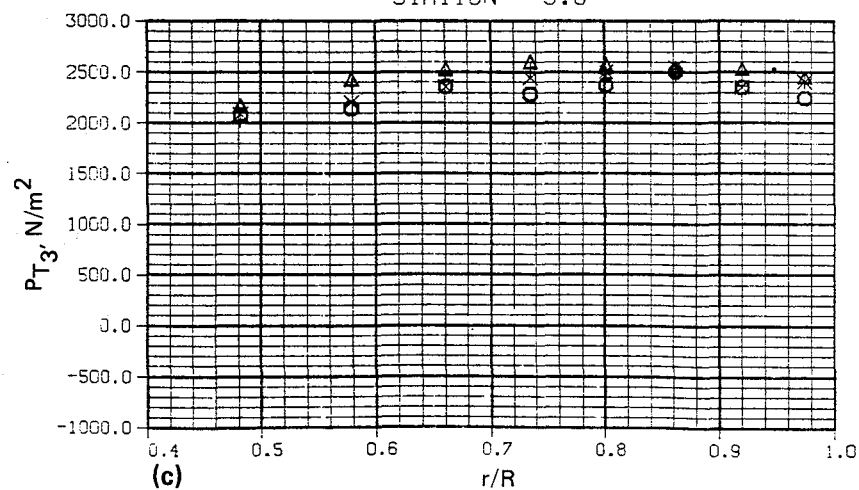


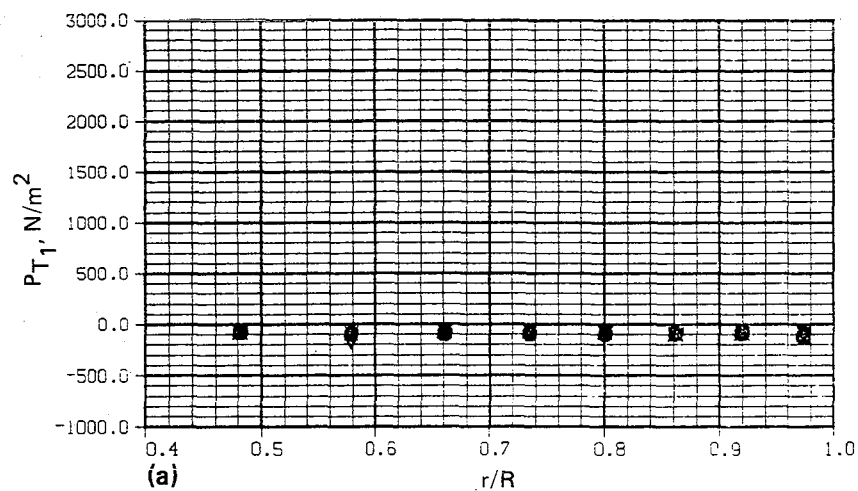
Figure D164.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

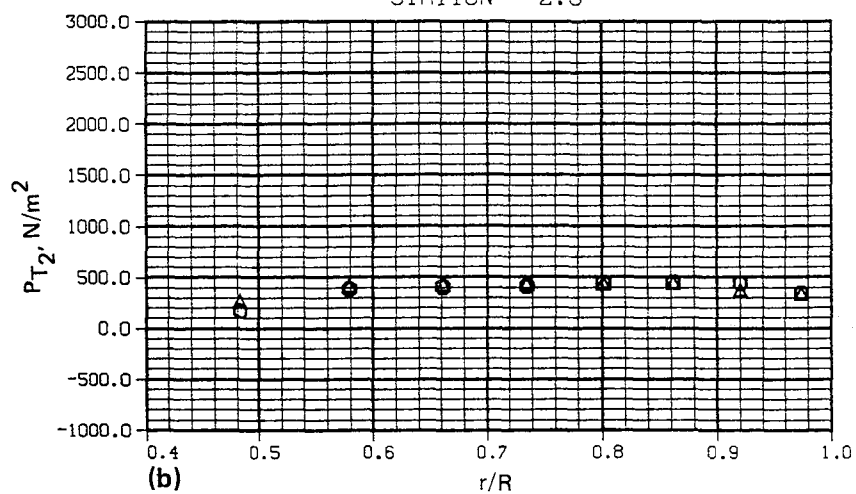
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 285. MASS FLOW: 68.21 slugs/sec

RPM: 483. STATION = 1.0



STATION = 2.0



STATION = 3.0

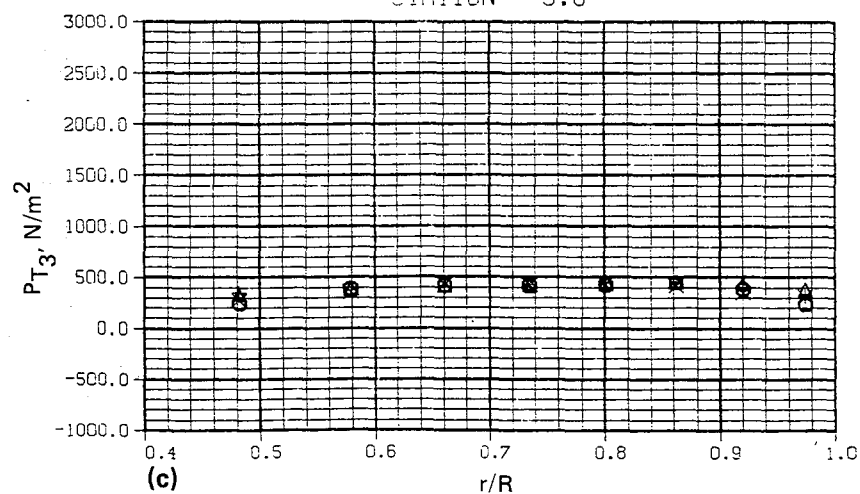


Figure D165.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 286. MASS FLOW: 102.58 slugs/sec

RPM: 720. STATION = 1.0

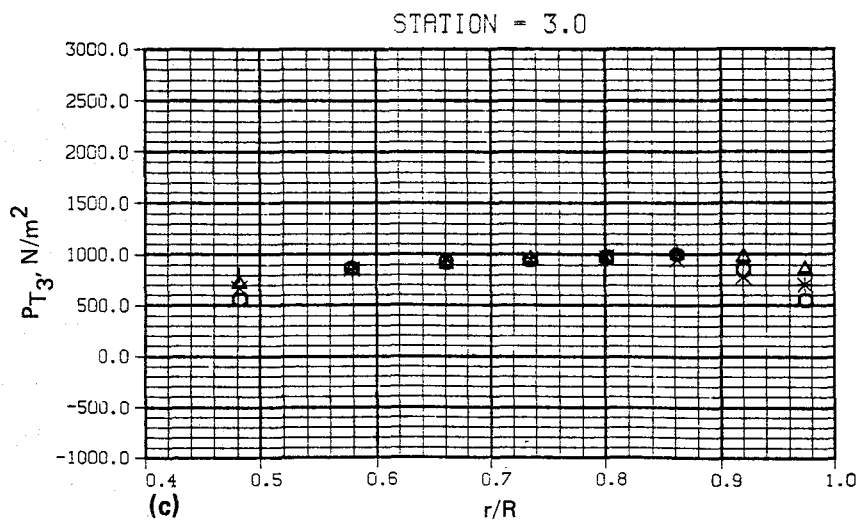
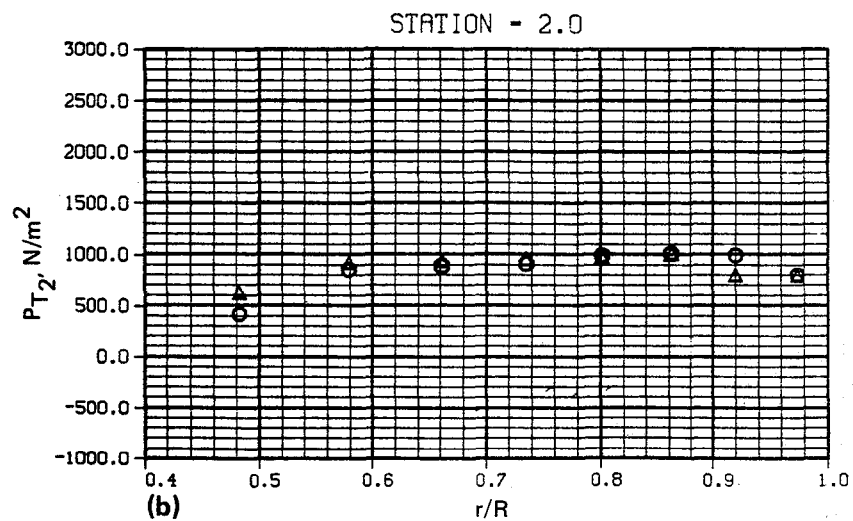
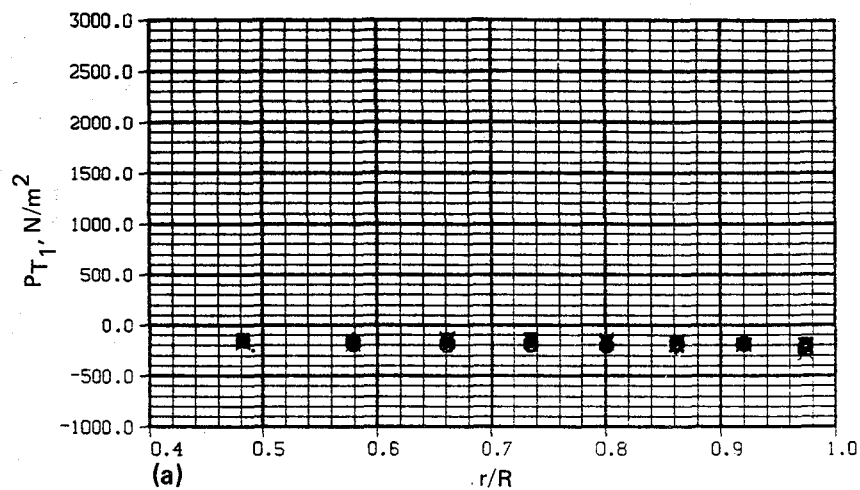
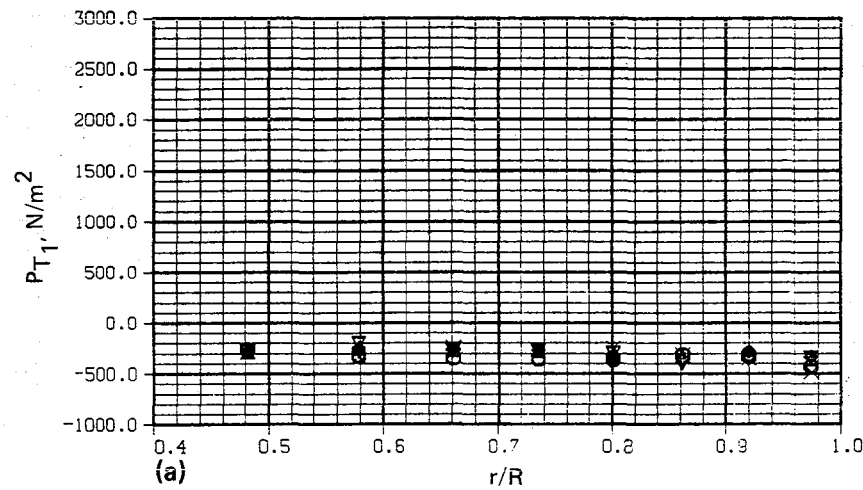
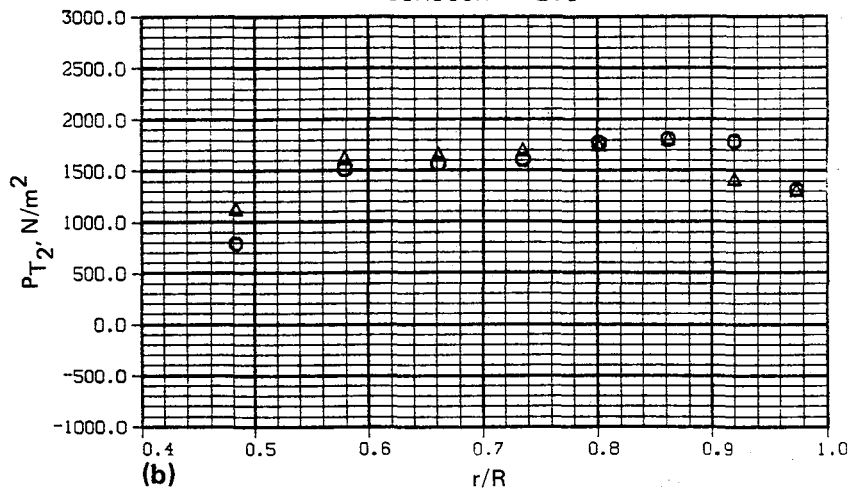


Figure D166.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 47.6
 RUN NO: 287. MASS FLOW: 138.04 slugs/sec
 RPM: 958. STATION = 1.0



STATION = 2.0



STATION = 3.0

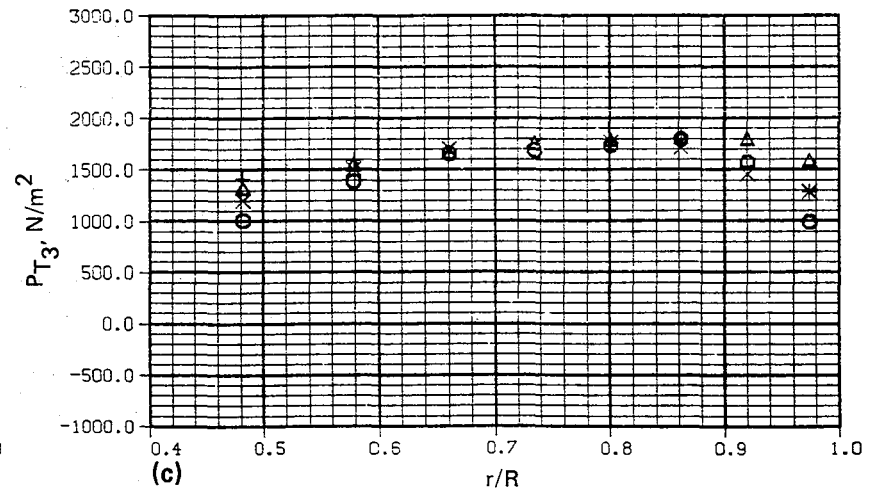


Figure D167.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 288. MASS FLOW: 174.67 slugs/sec

RPM: 1203. STATION = 1.0

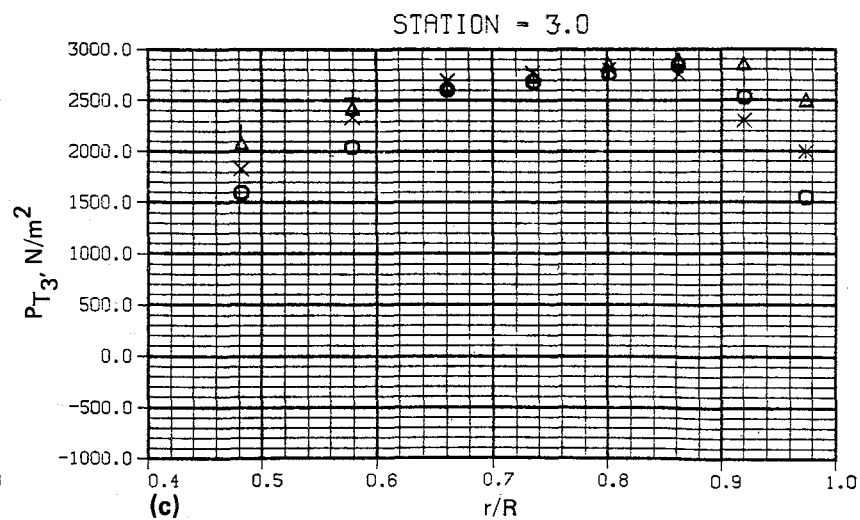
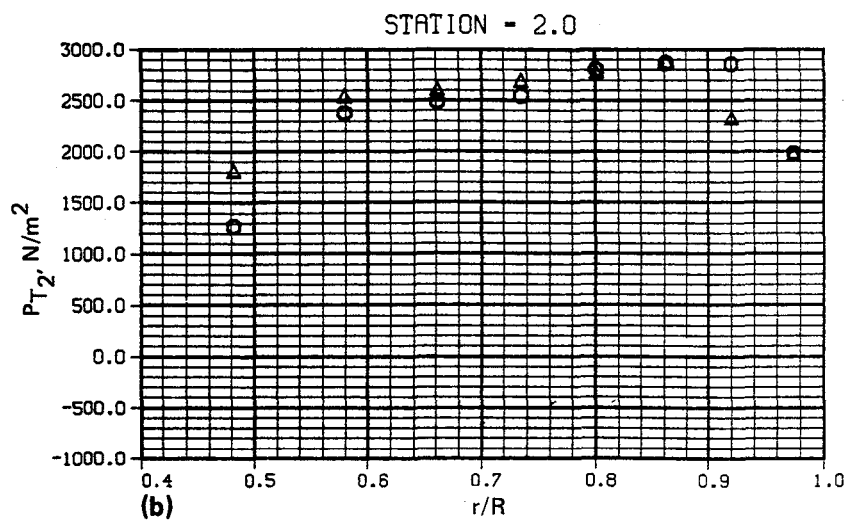
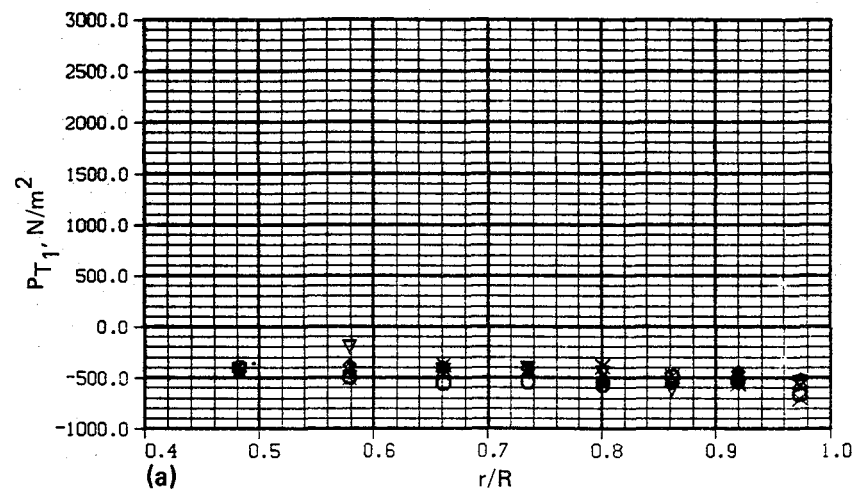


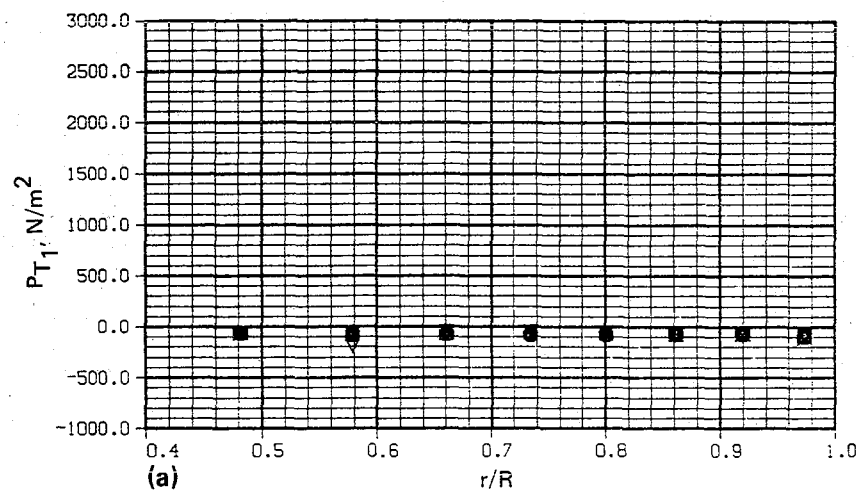
Figure D168.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

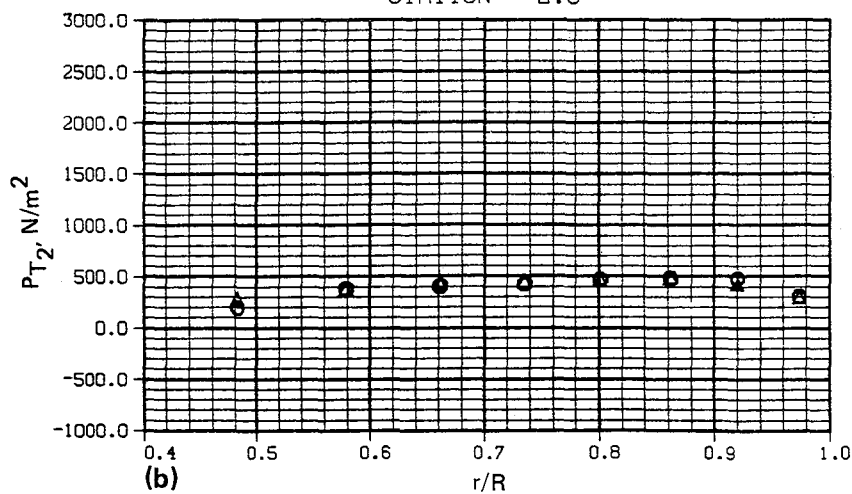
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 289. MASS FLOW: 61.71 slugs/sec

RPM: 482. STATION = 1.0



STATION = 2.0



STATION = 3.0

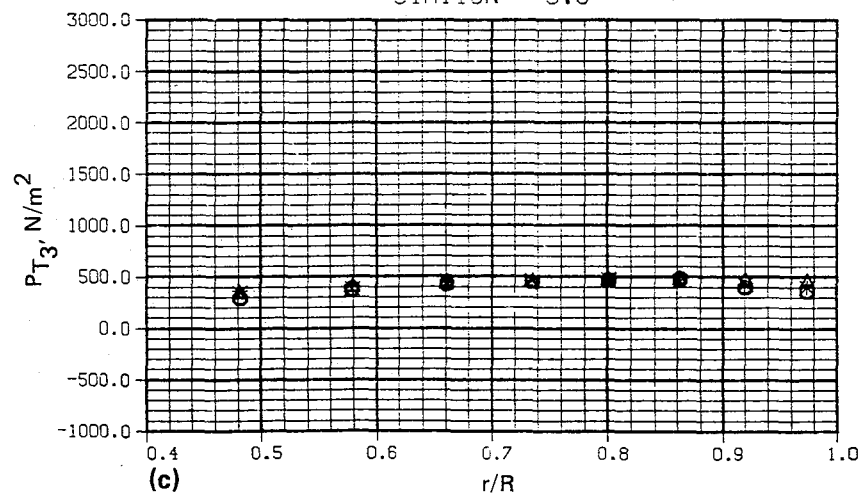


Figure D169.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 290. MASS FLOW: 93.84 slugs/sec

RPM: 723. STATION = 1.0

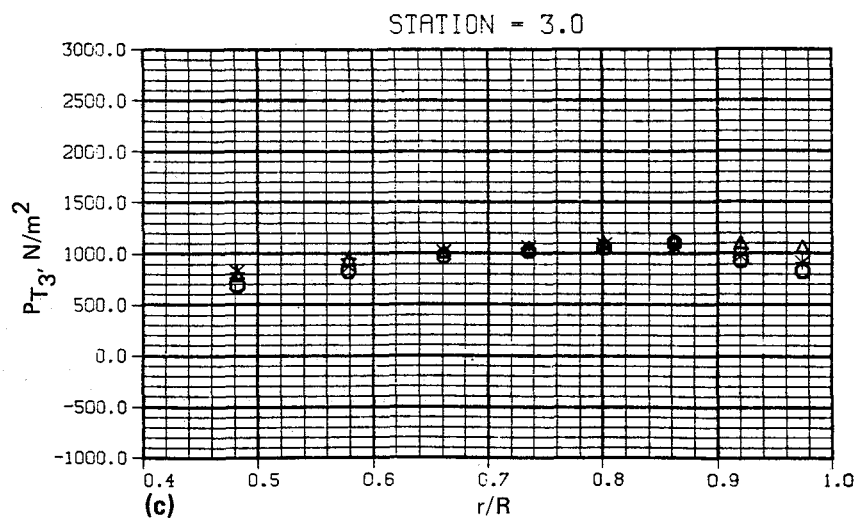
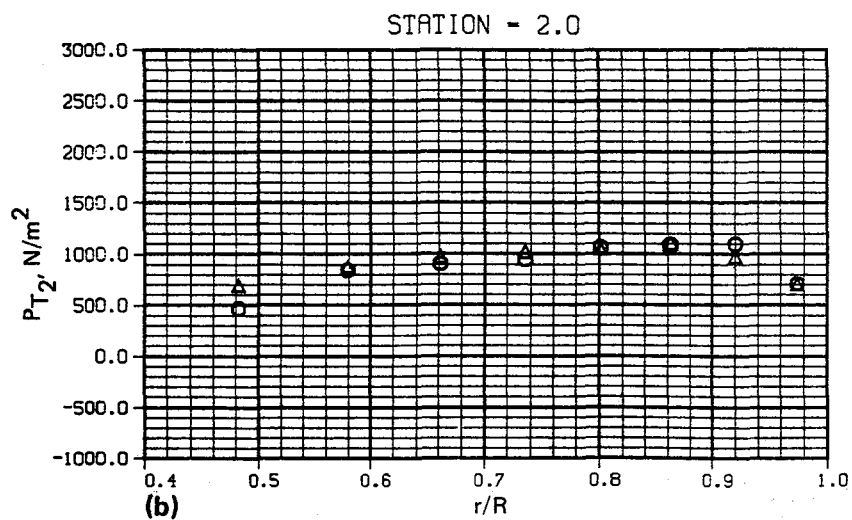
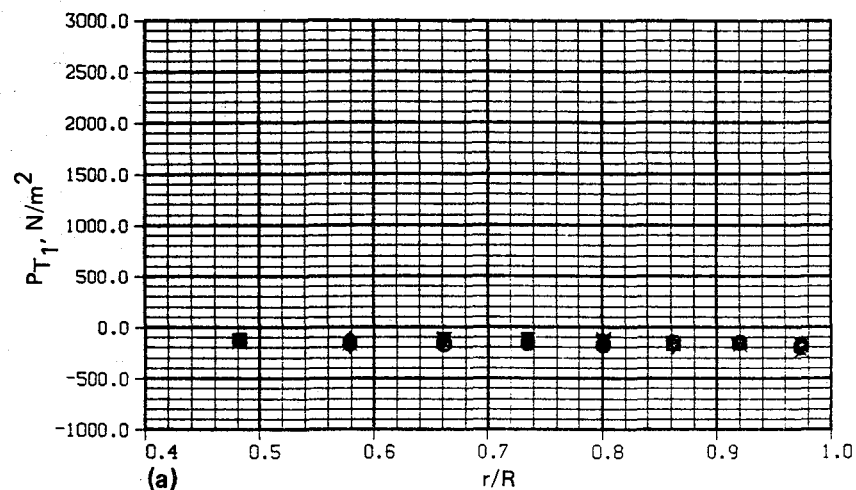
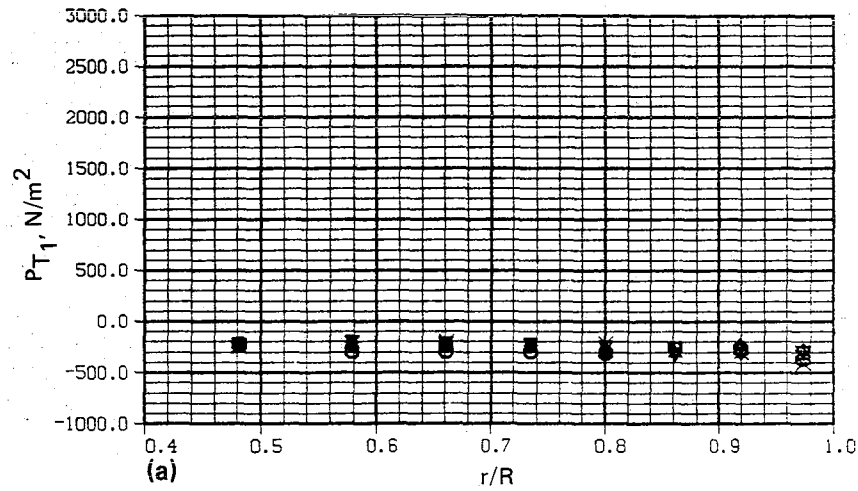
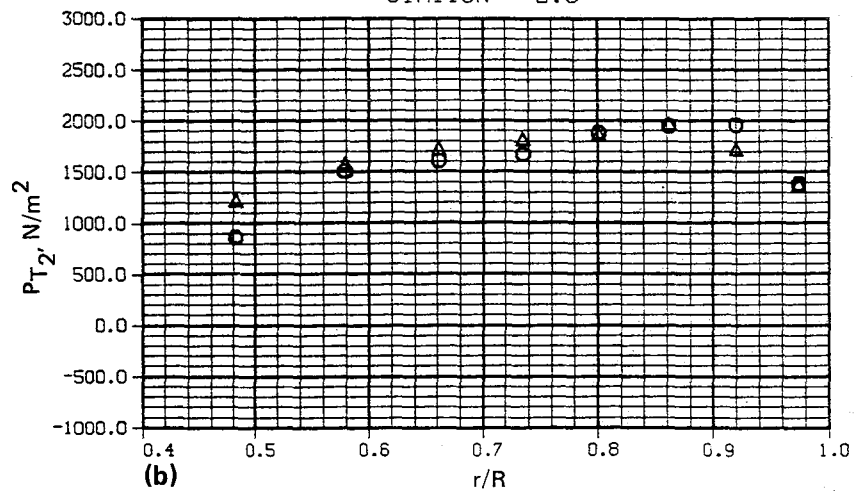


Figure D170.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 47.6
 RUN NO: 291. MASS FLOW: 126.54 slugs/sec
 RPM: 962. STATION = 1.0



STATION = 2.0



STATION = 3.0

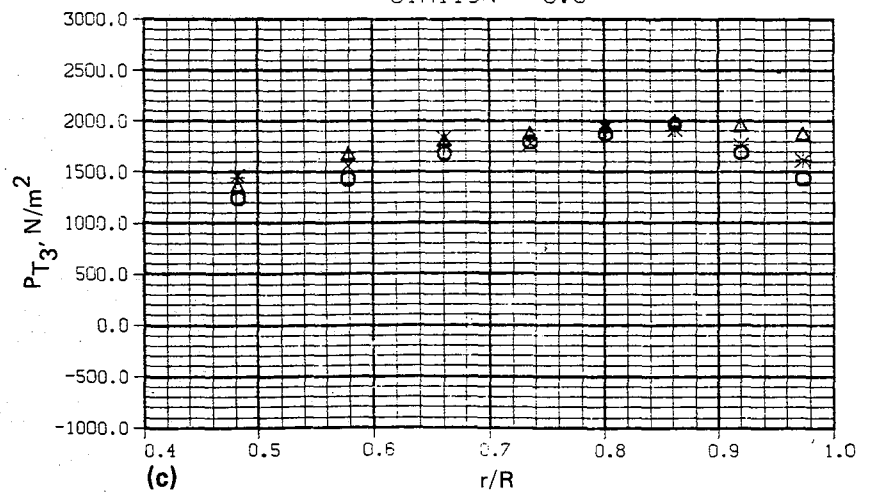


Figure D171.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 292. MASS FLOW: 159.47 slugs/sec

RPM: 1205. STATION = 1.0

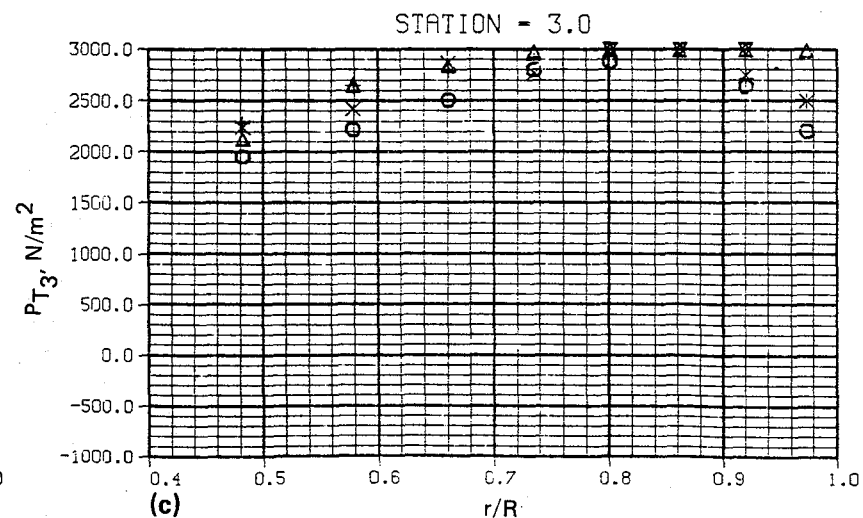
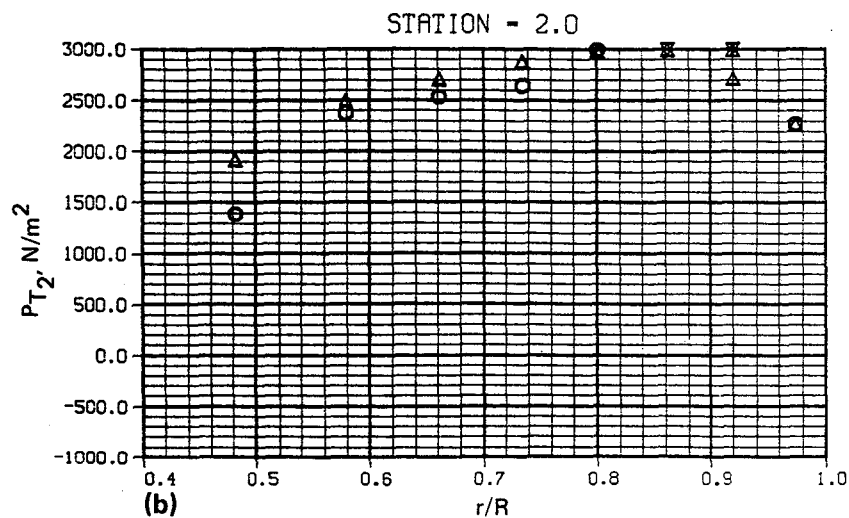
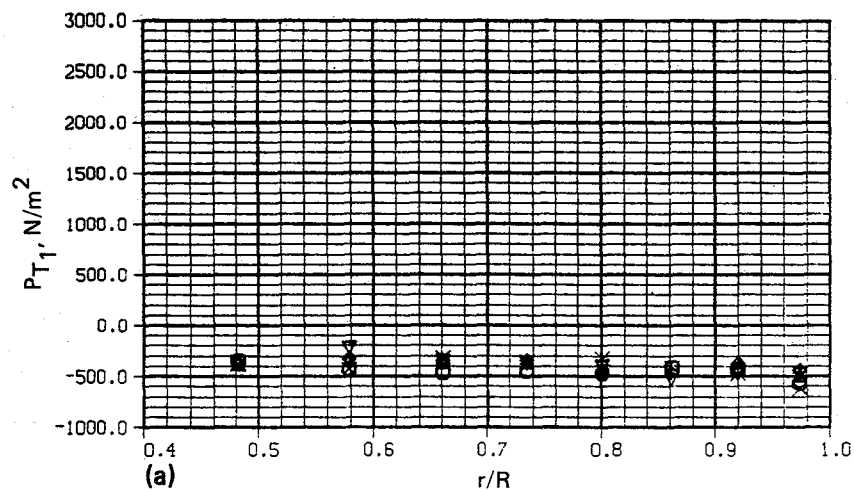


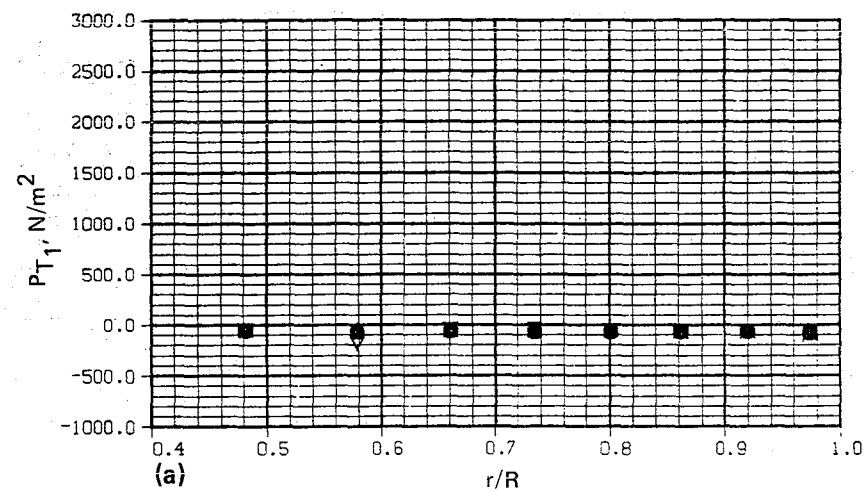
Figure D172.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

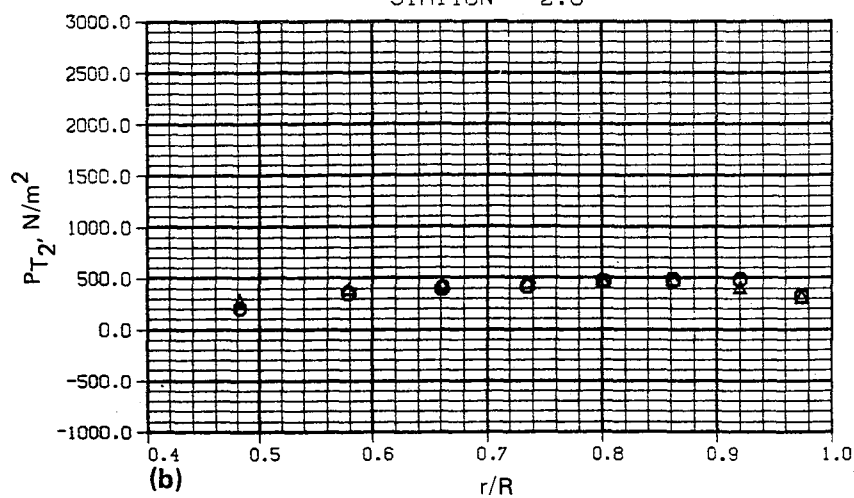
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 293. MASS FLOW: 58.36 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

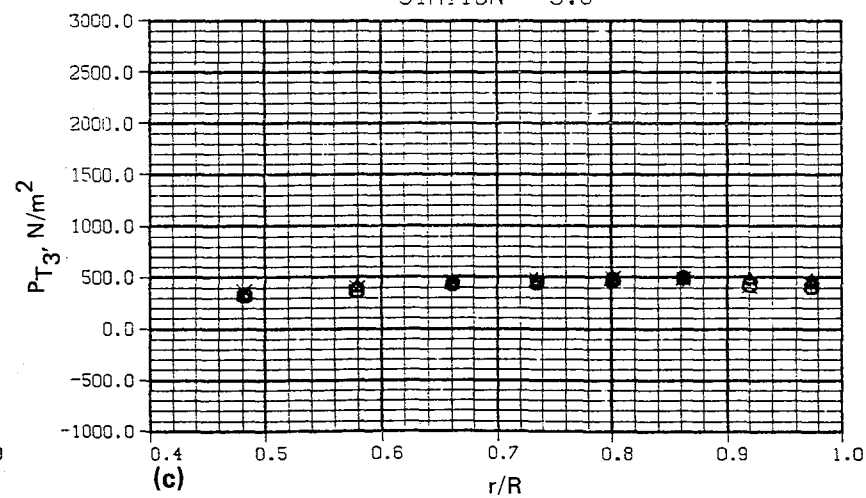


Figure D173.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 294. MASS FLOW: 89.21 slugs/sec

RPM: 719. STATION = 1.0

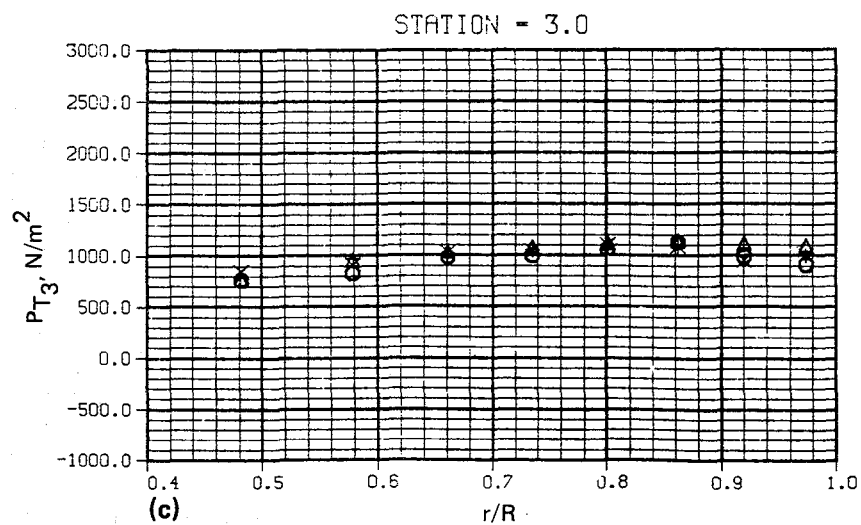
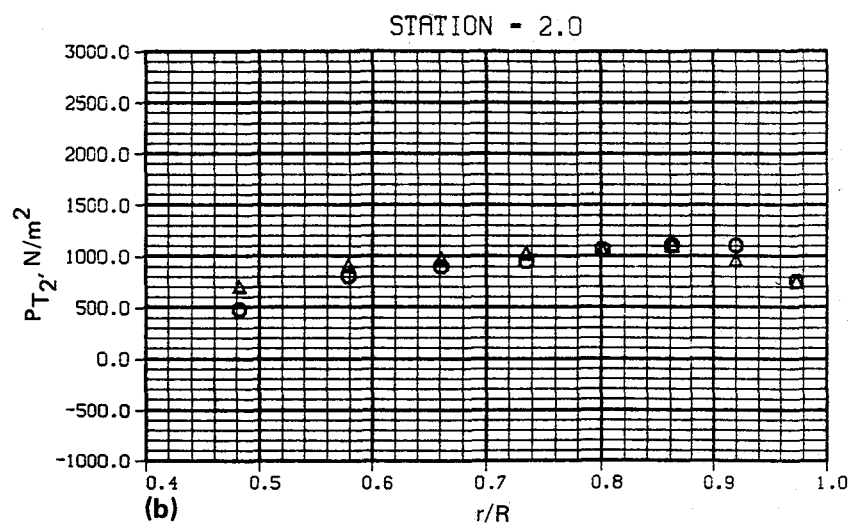
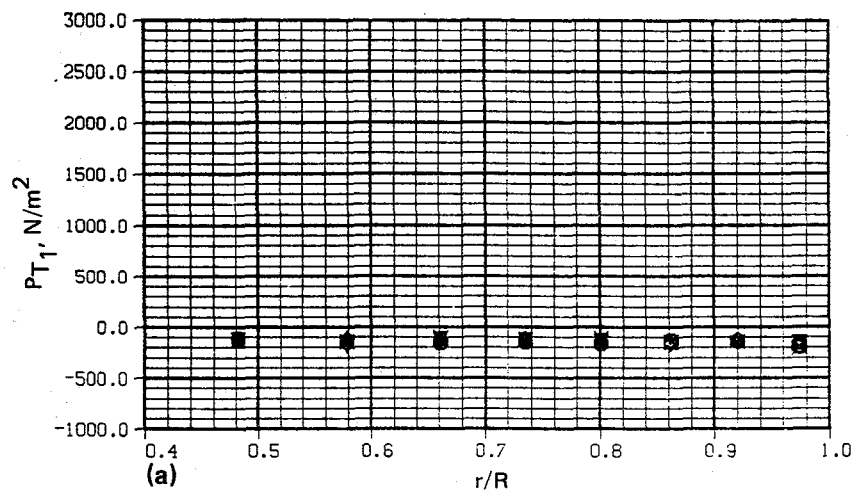


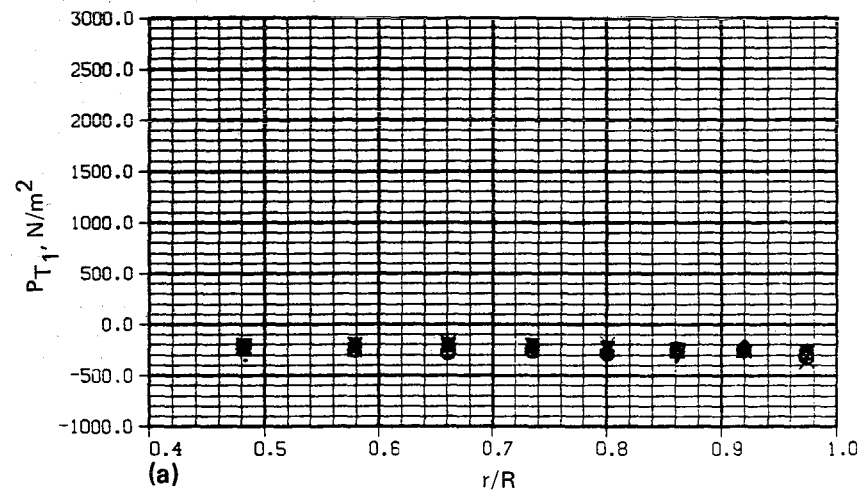
Figure D174.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

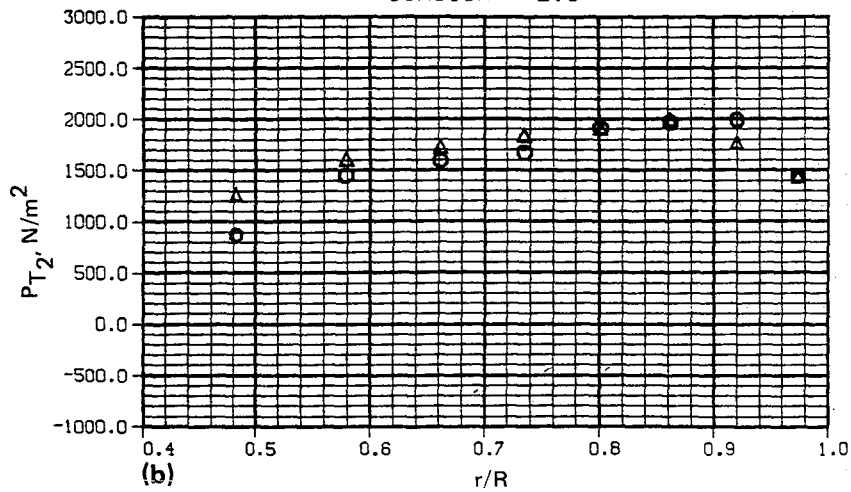
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 295. MASS FLOW: 120.38 slugs/sec

RPM: 958. STATION = 1.0



STATION = 2.0



STATION = 3.0

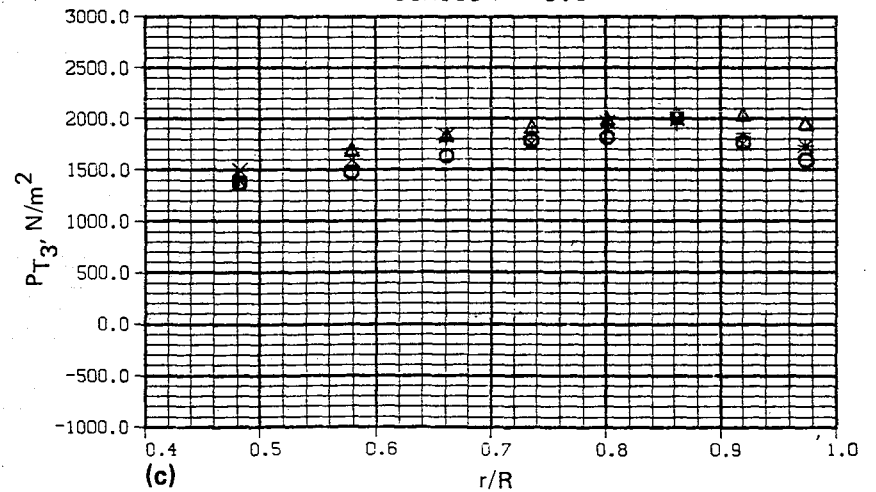


Figure D175.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 296. MASS FLOW: 153.47 slugs/sec

RPM: 1203. STATION = 1.0

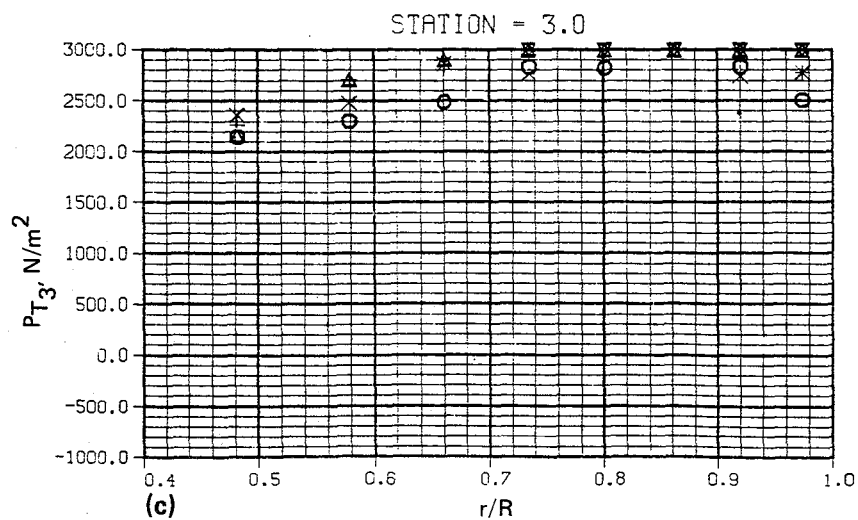
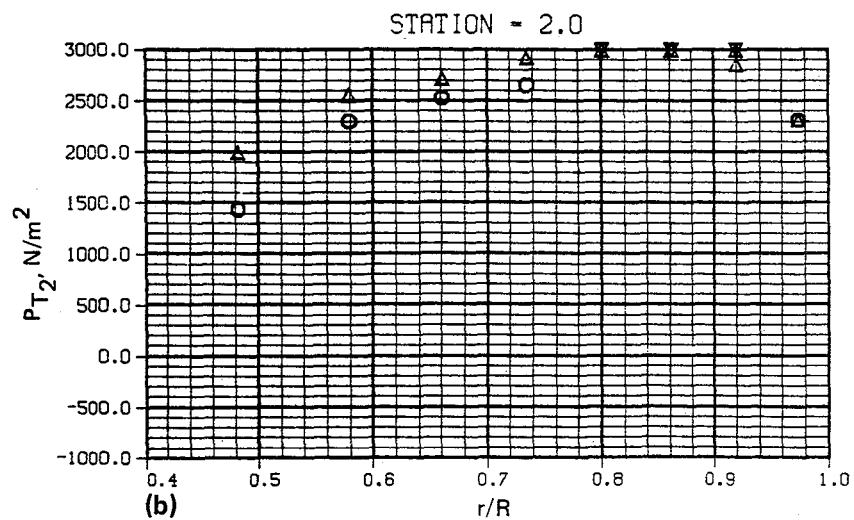
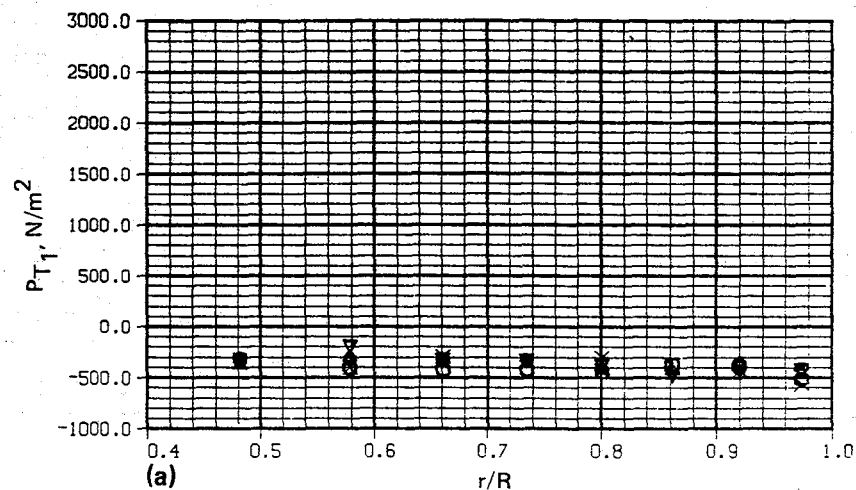


Figure D176.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 297. MASS FLOW: 54.03 slugs/sec

RPM: 481. STATION = 1.0

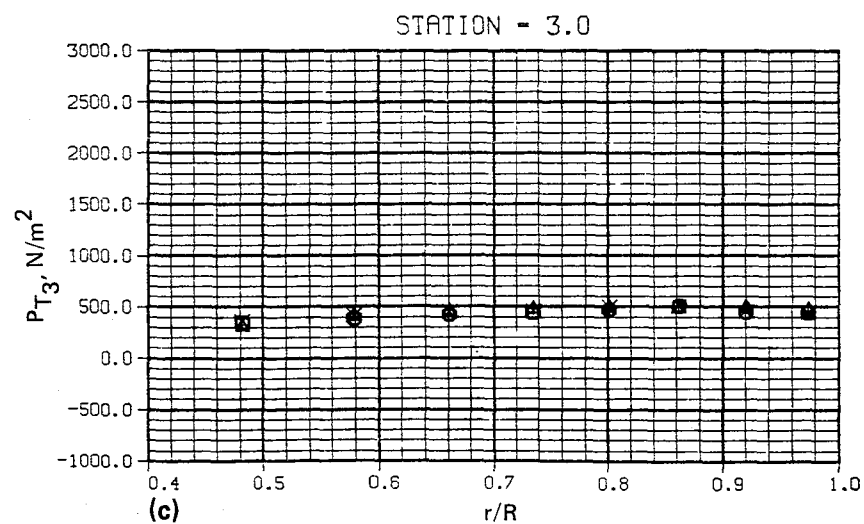
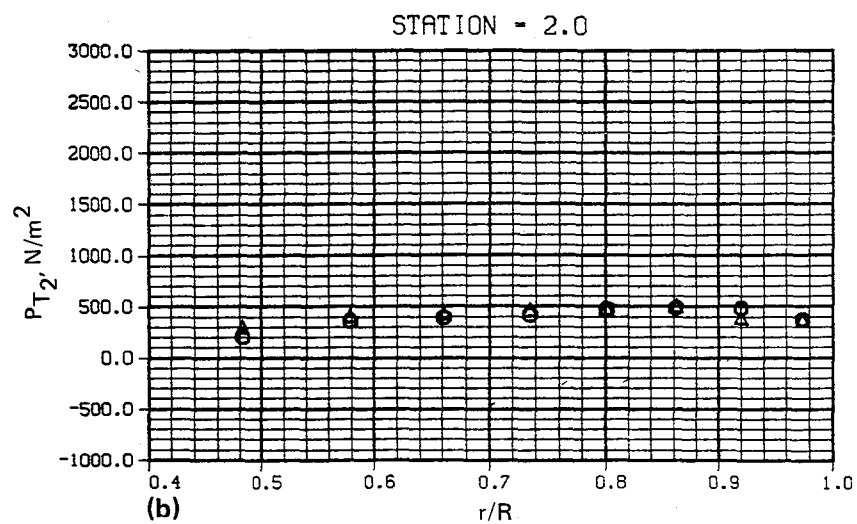
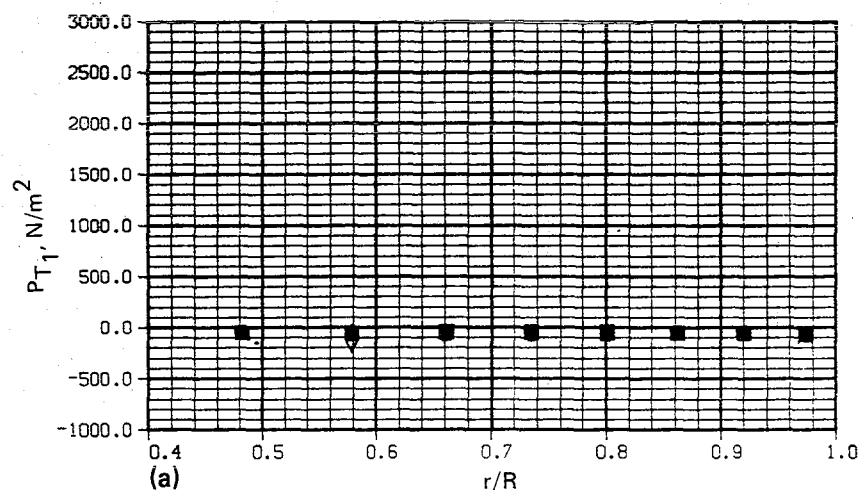


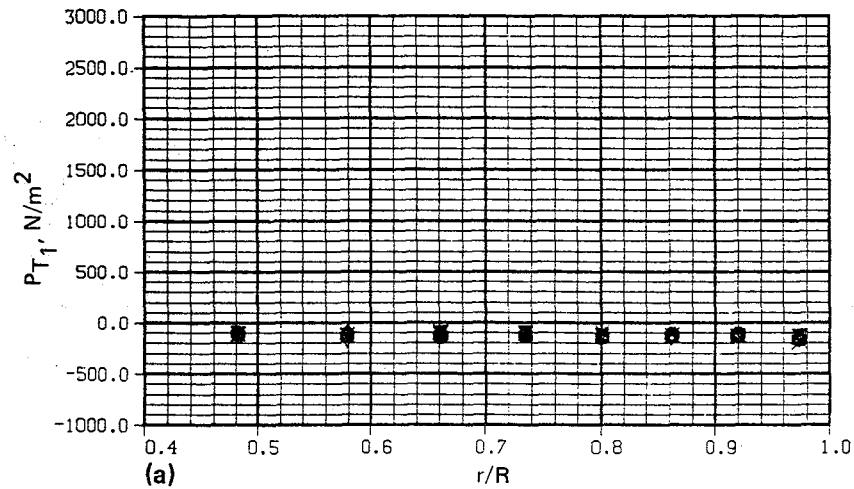
Figure D177.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

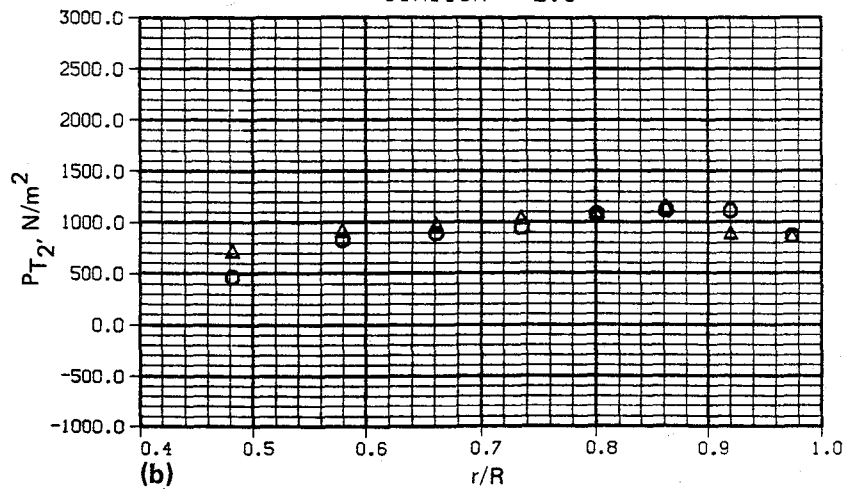
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 298. MASS FLOW: 82.69 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

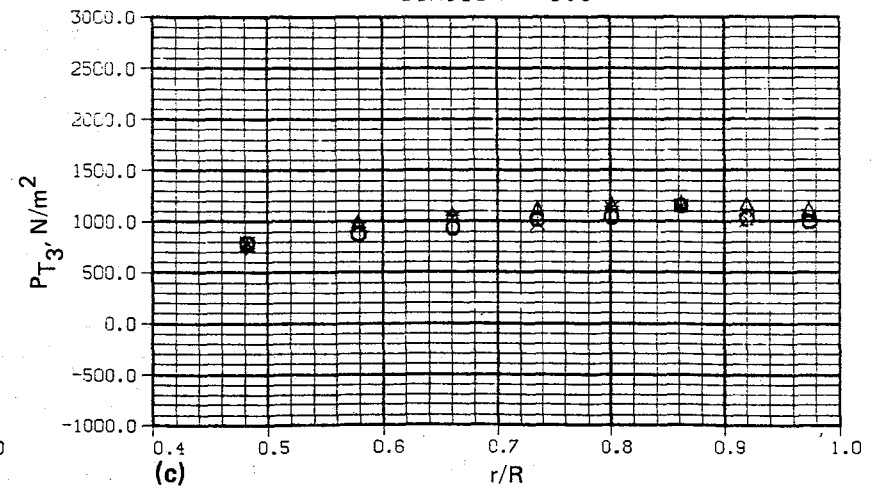
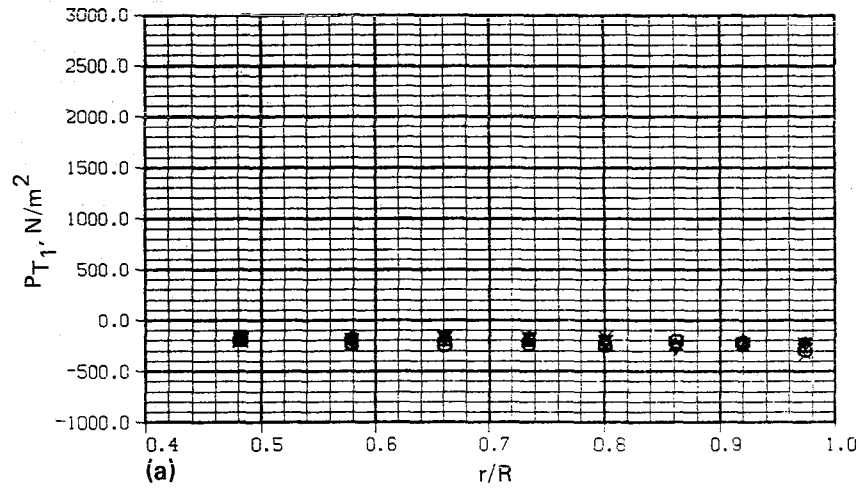
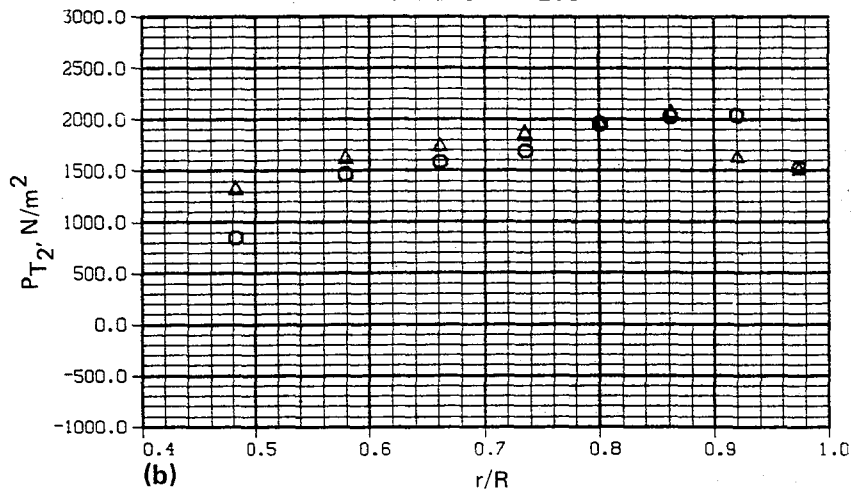


Figure D178.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 47.6
 RUN NO: 299. MASS FLOW: 112.86 slugs/sec
 RPM: 962. STATION = 1.0



STATION = 2.0



STATION = 3.0

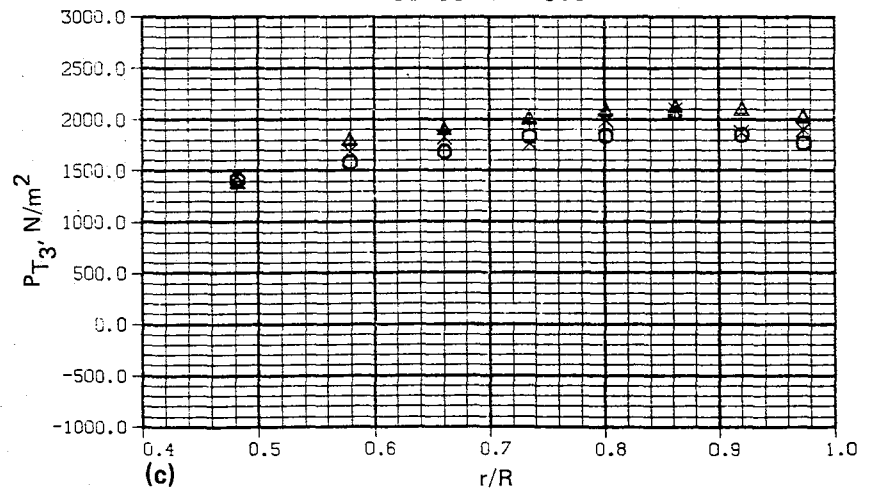


Figure D179.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 300. MASS FLOW: 143.40 slugs/sec

RPM: 1206. STATION = 1.0

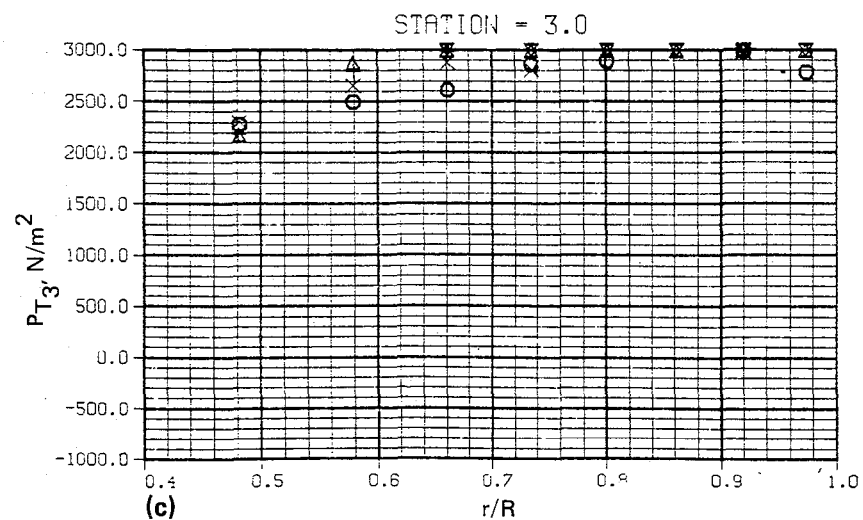
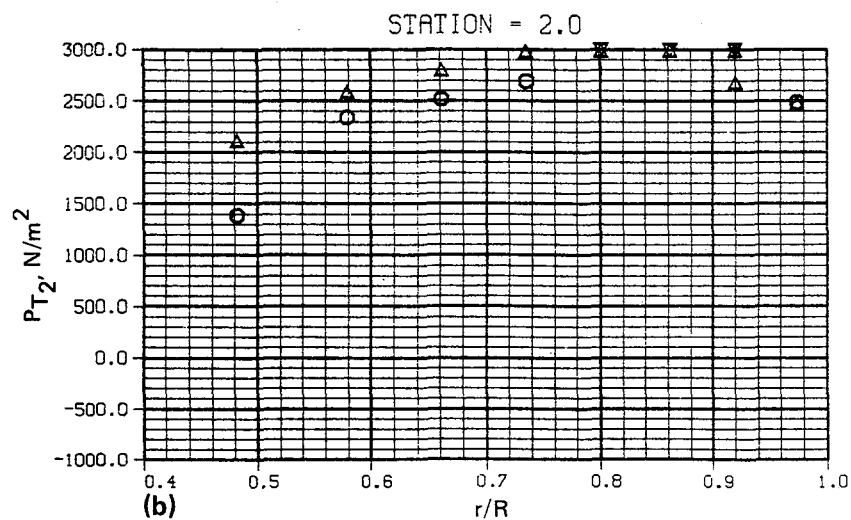
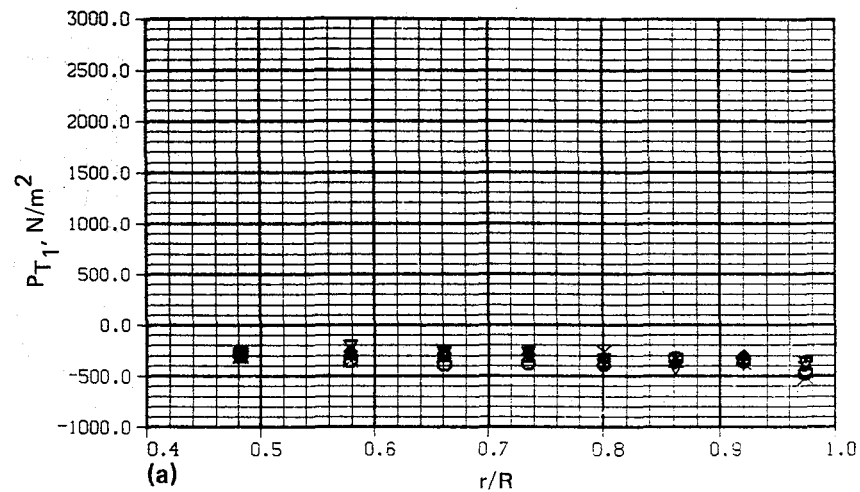


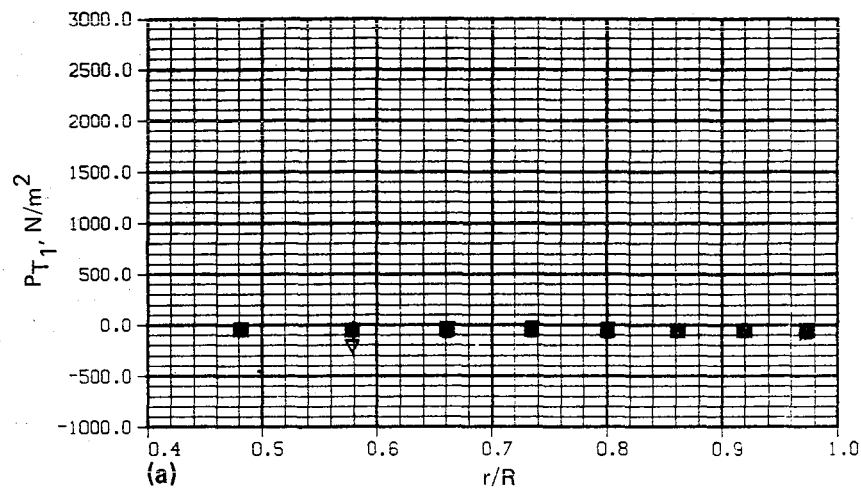
Figure D180.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

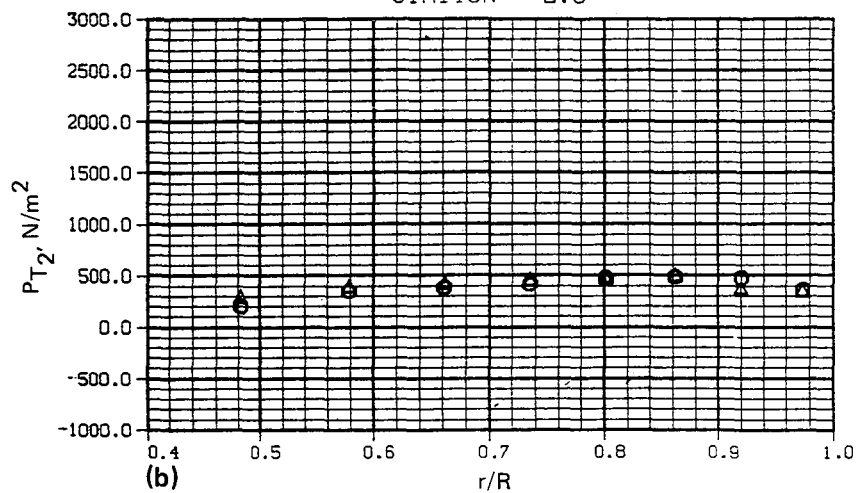
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 301. MASS FLOW: 52.85 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

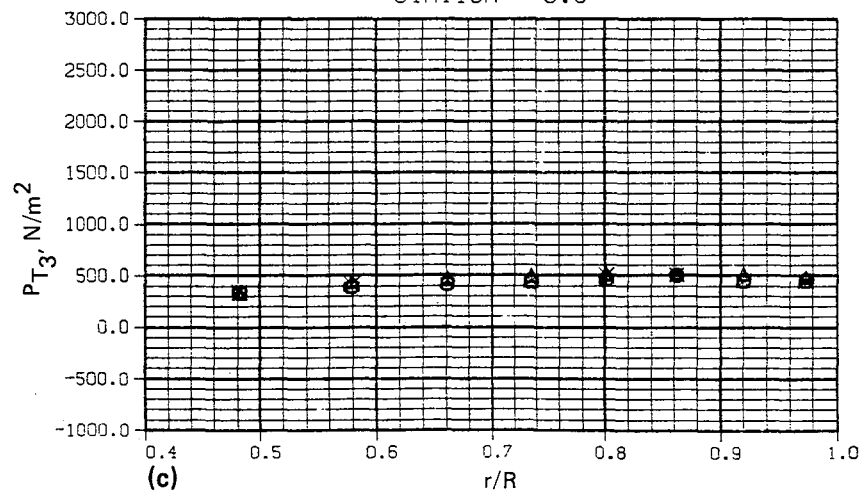


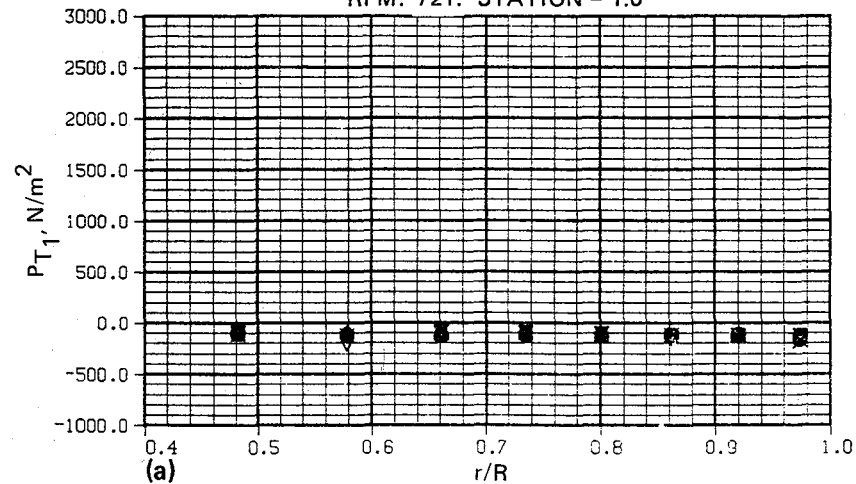
Figure D181.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

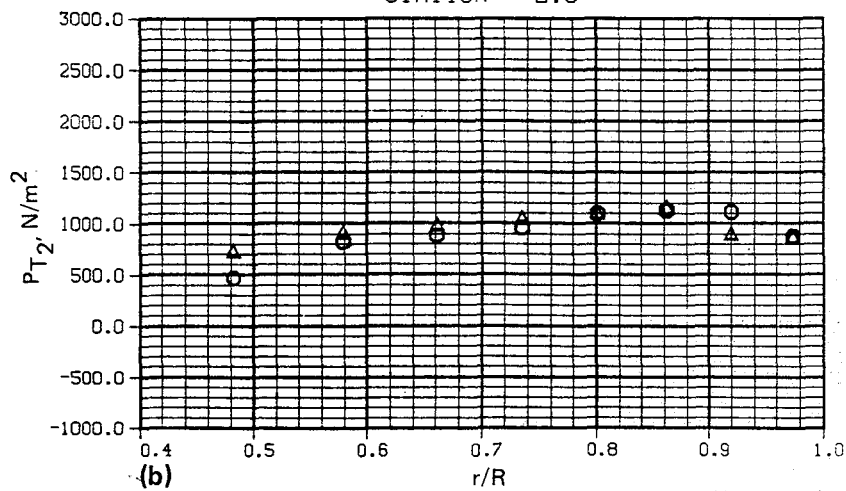
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 302. MASS FLOW: 81.80 slugs/sec

RPM: 721. STATION = 1.0



STATION = 2.0



STATION = 3.0

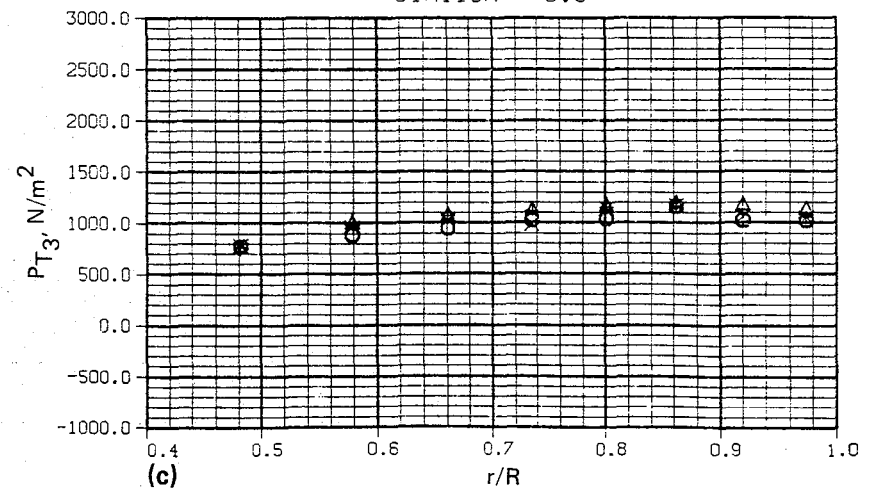


Figure D182.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 47.6
 RUN NO: 303. MASS FLOW: 110.35 slugs/sec
 RPM: 958. STATION = 1.0

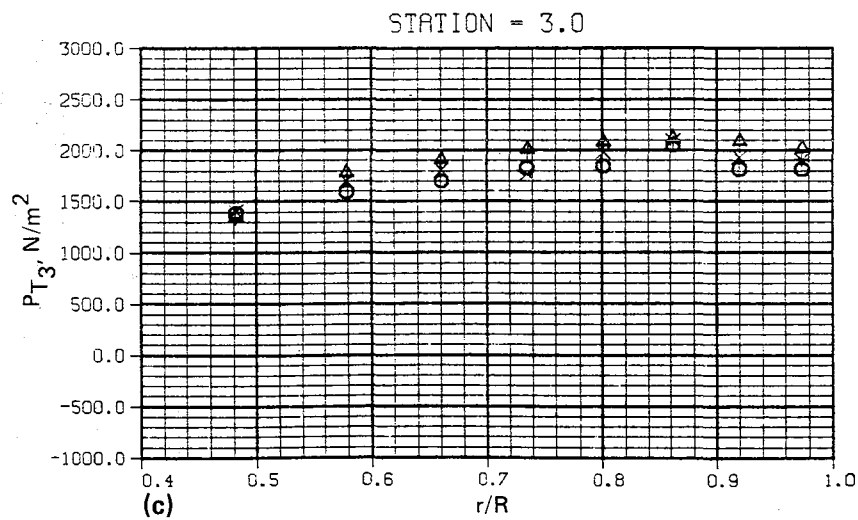
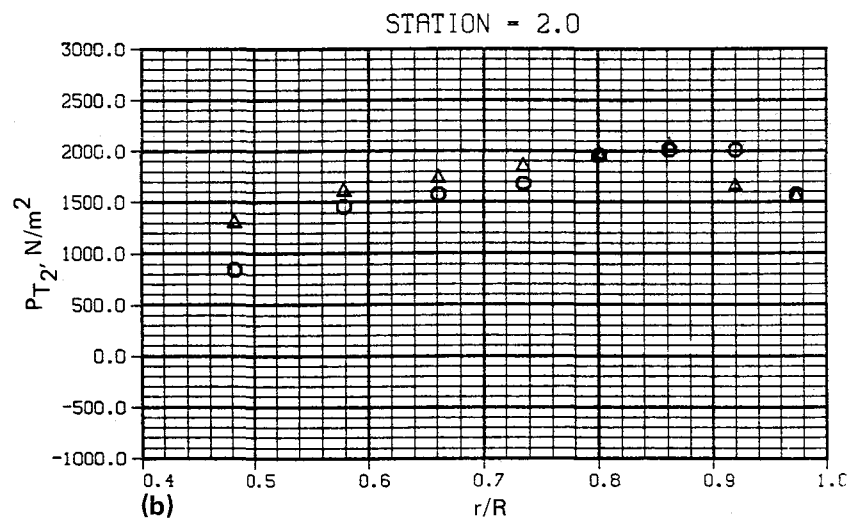
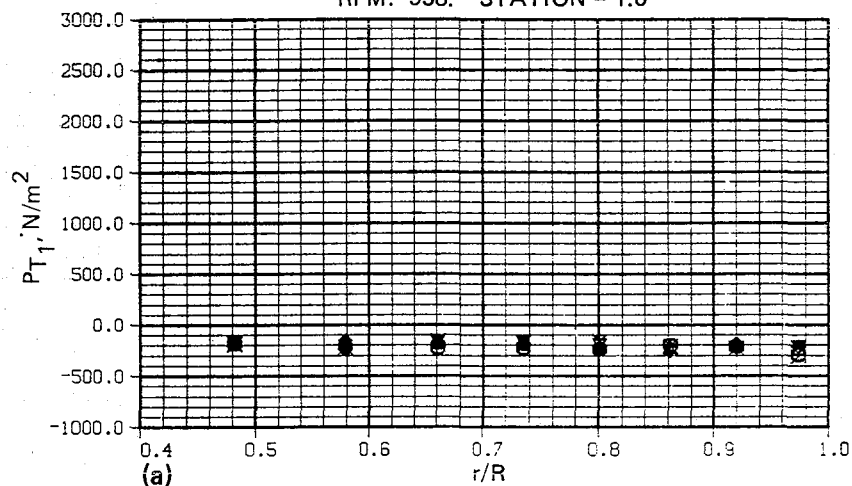


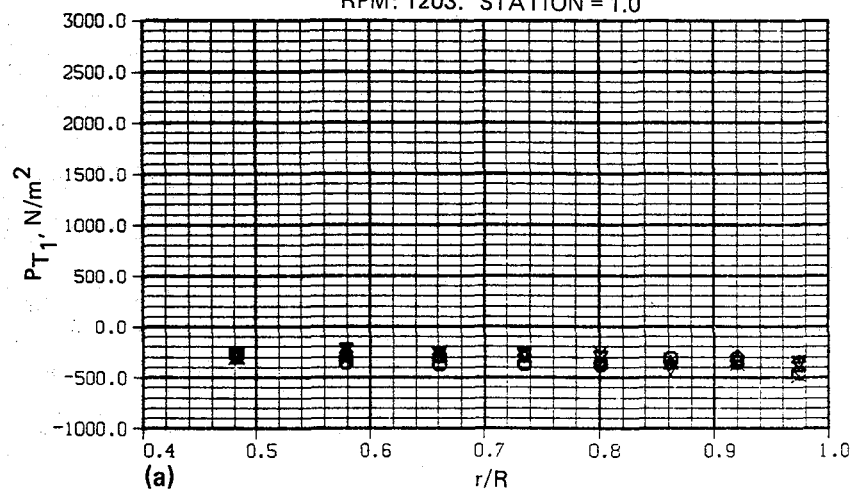
Figure D183.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

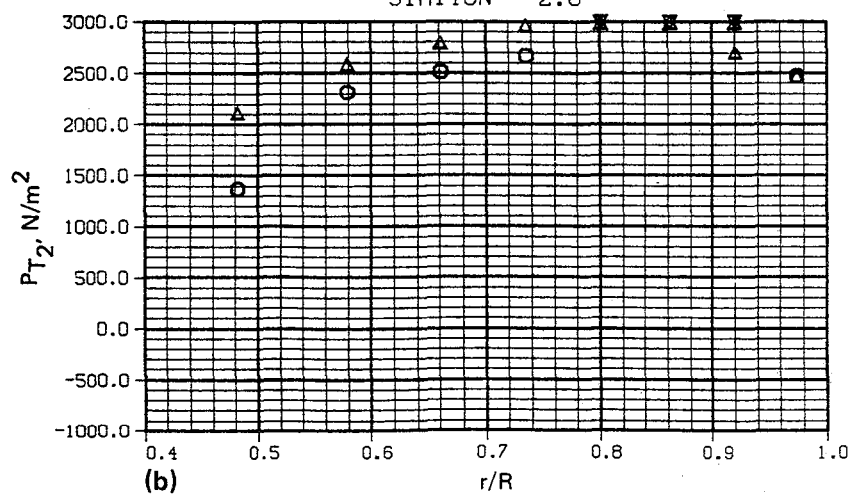
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 304. MASS FLOW: 140.91 slugs/sec

RPM: 1203. STATION = 1.0



STATION = 2.0



STATION = 3.0

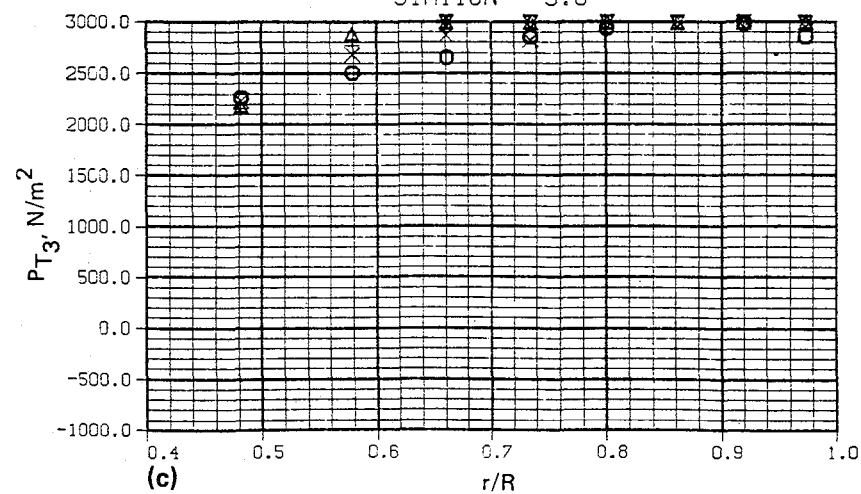


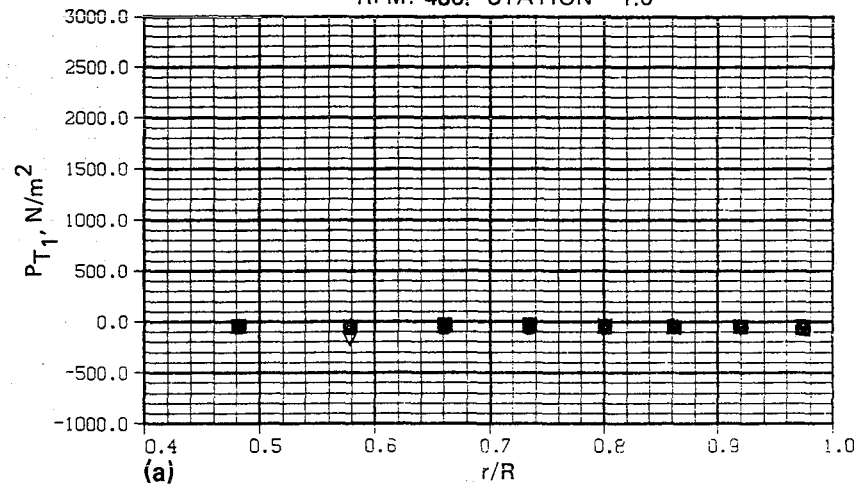
Figure D184.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

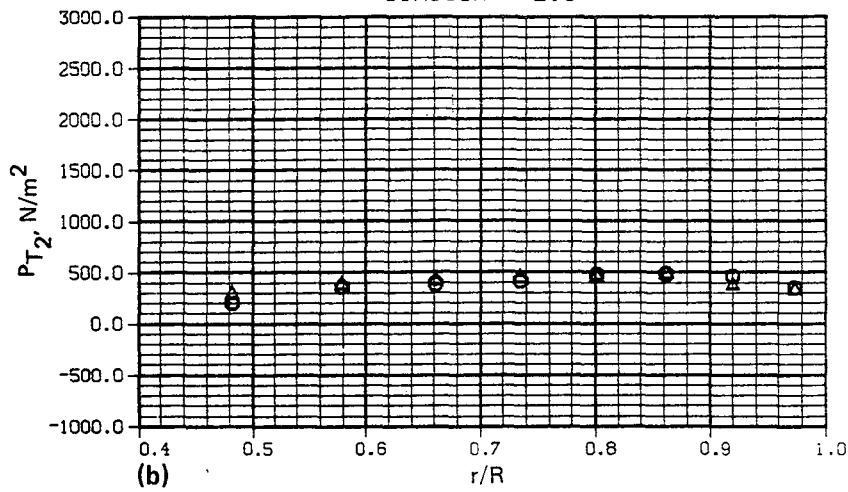
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 305. MASS FLOW: 50.82 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

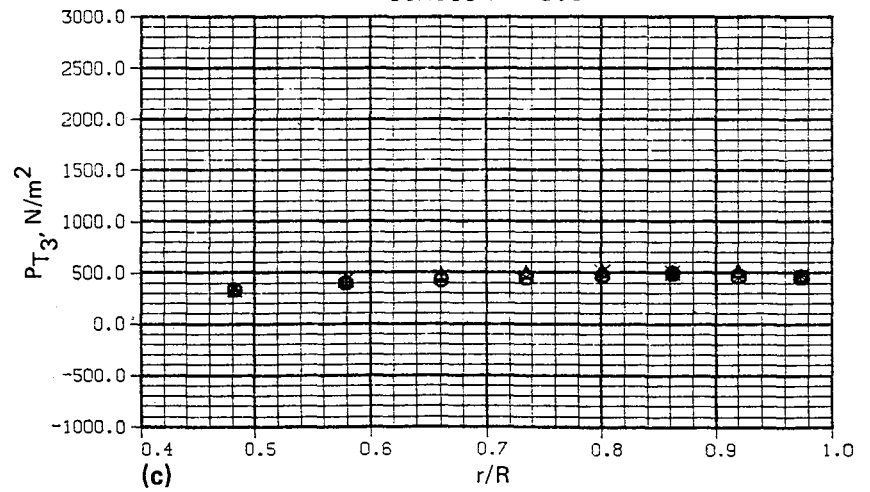


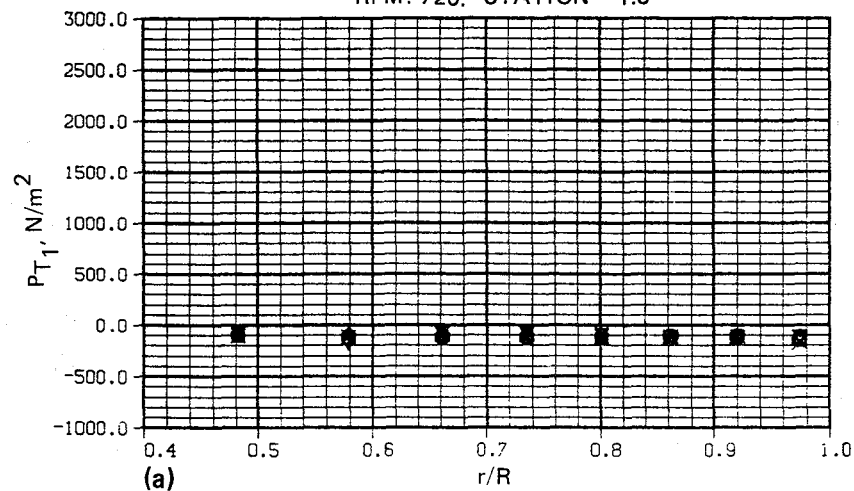
Figure D185.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

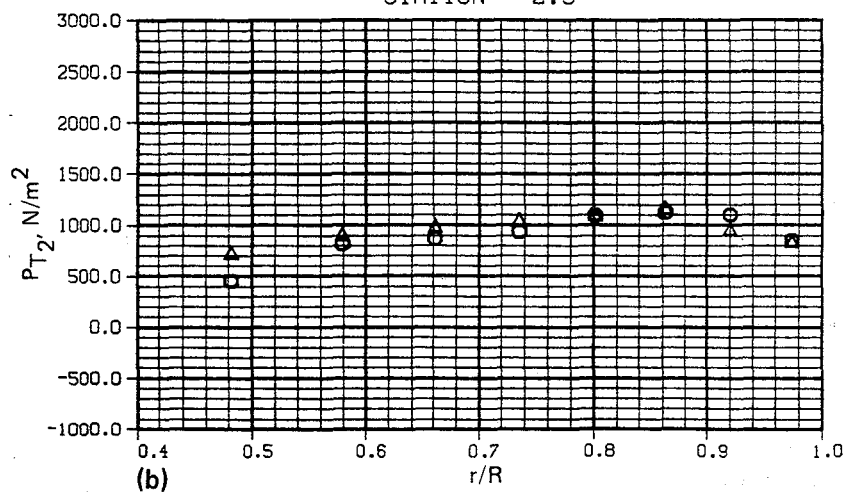
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 306. MASS FLOW: 78.10 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

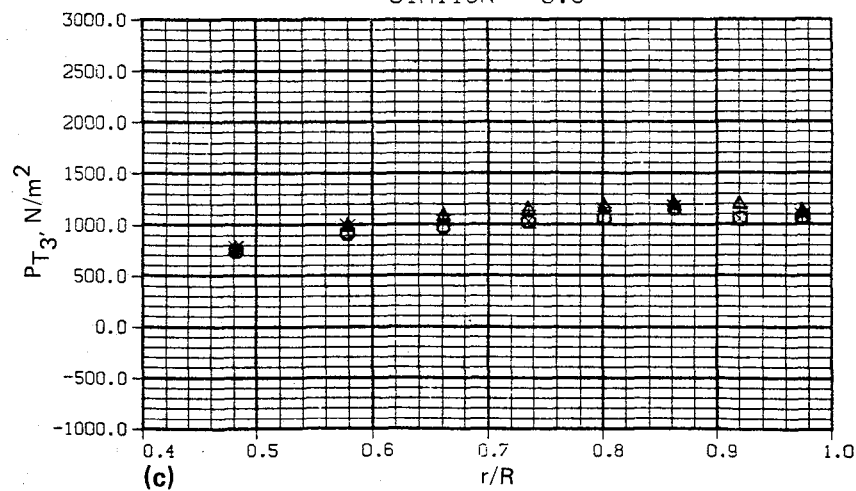


Figure D186.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 307. MASS FLOW: 106.46 slugs/sec

RPM: 965. STATION = 1.0

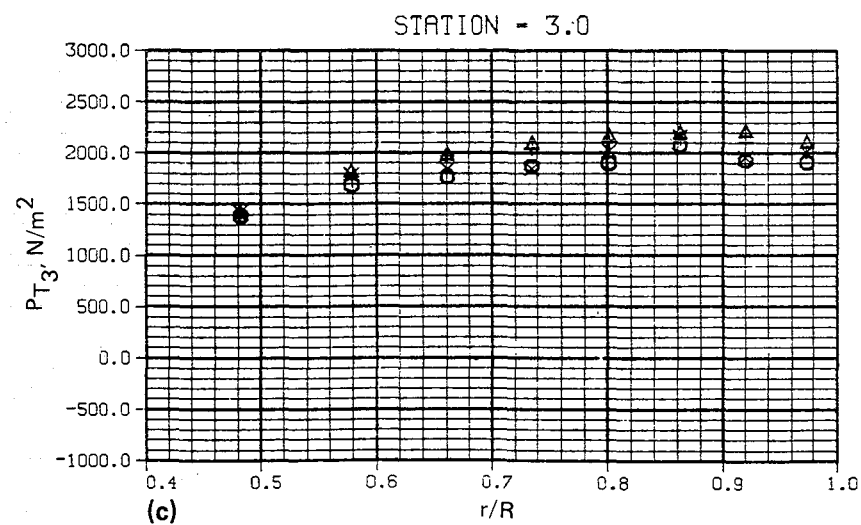
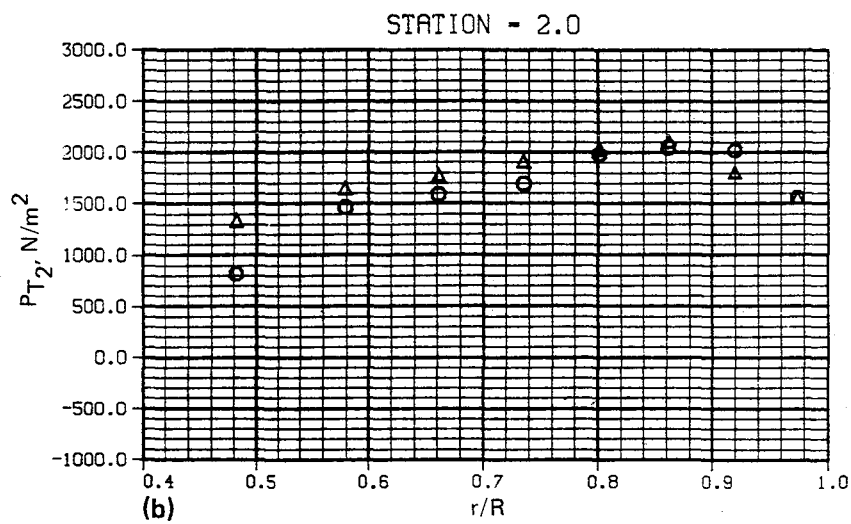
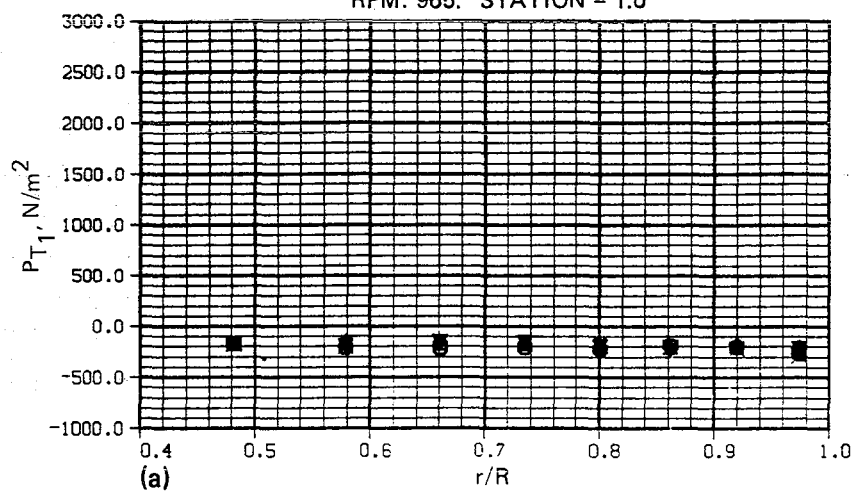


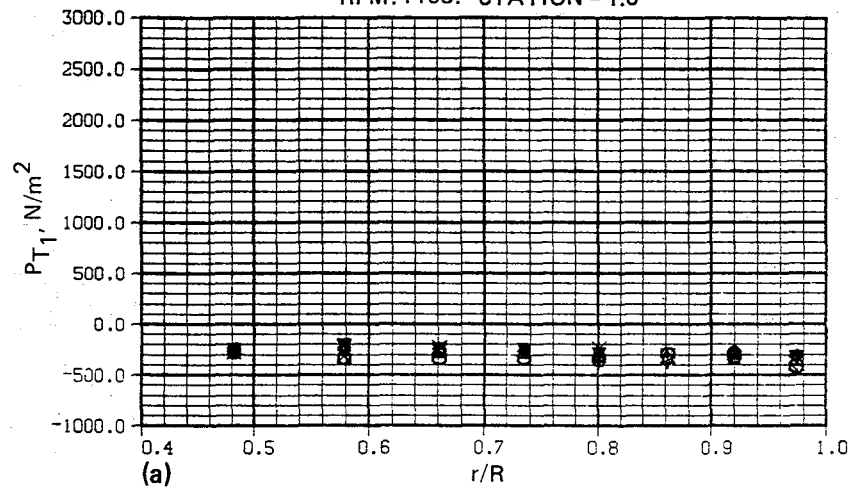
Figure D187.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

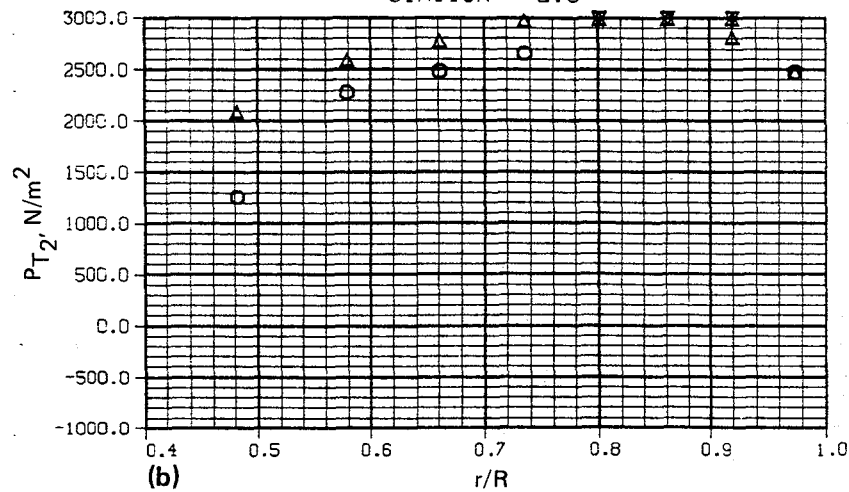
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 308. MASS FLOW: 134.77 slugs/sec

RPM: 1198. STATION = 1.0



STATION = 2.0



STATION = 3.0

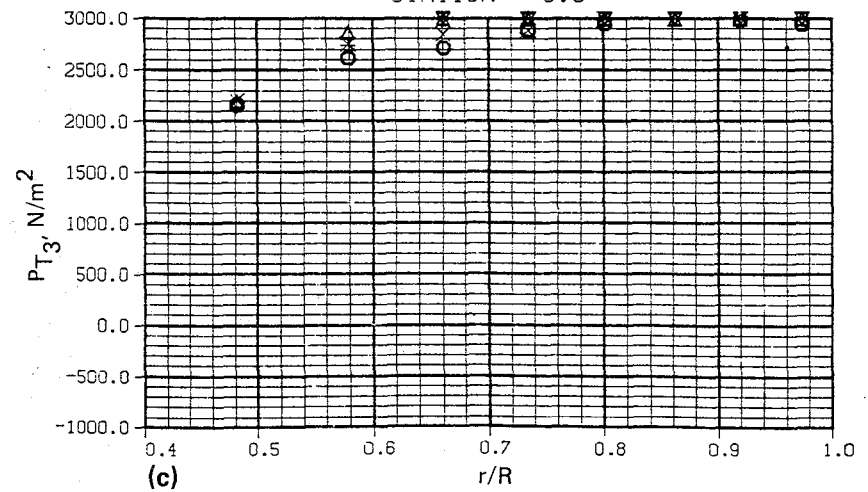


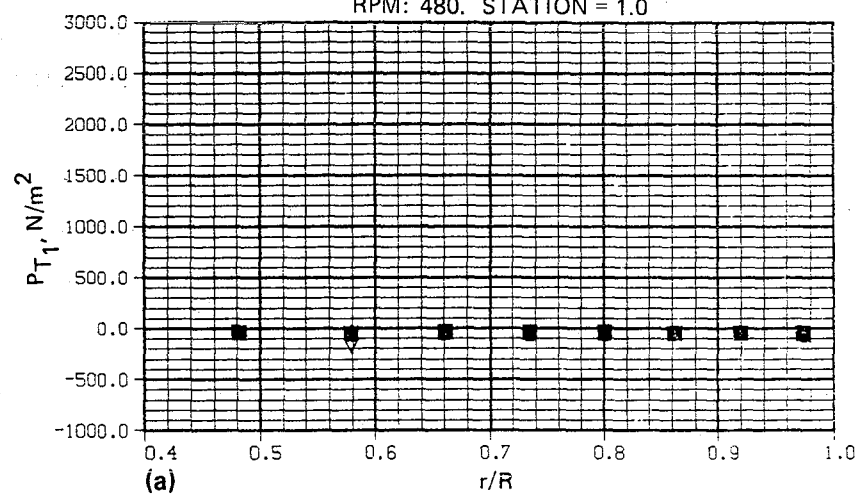
Figure D188.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

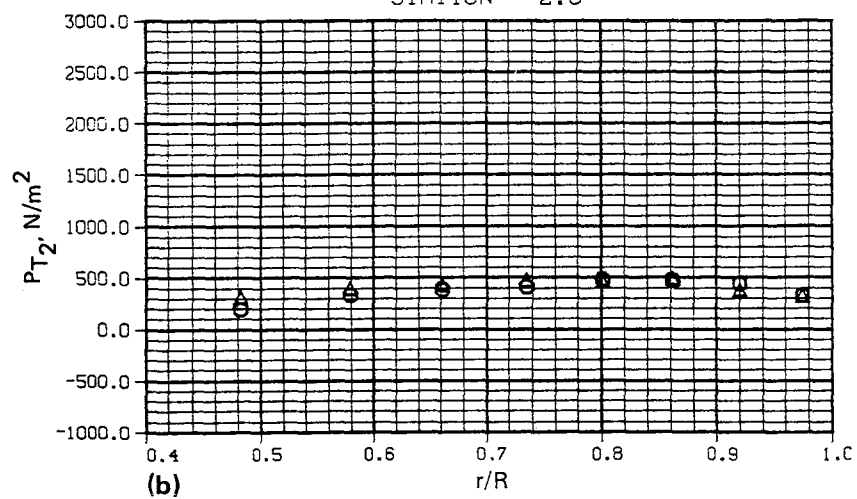
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 309. MASS FLOW: 48.07 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

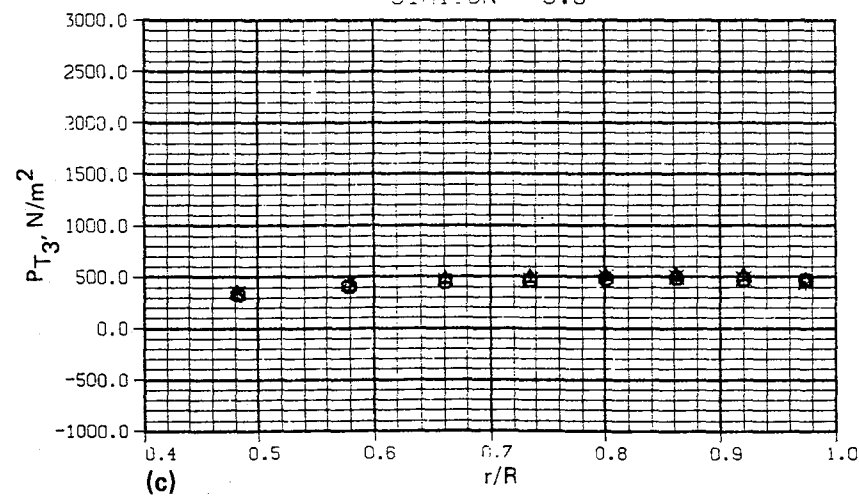


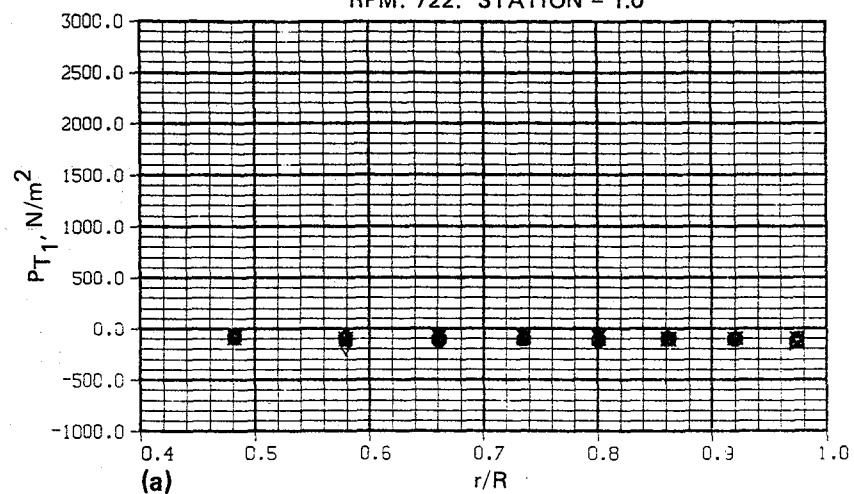
Figure D189.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

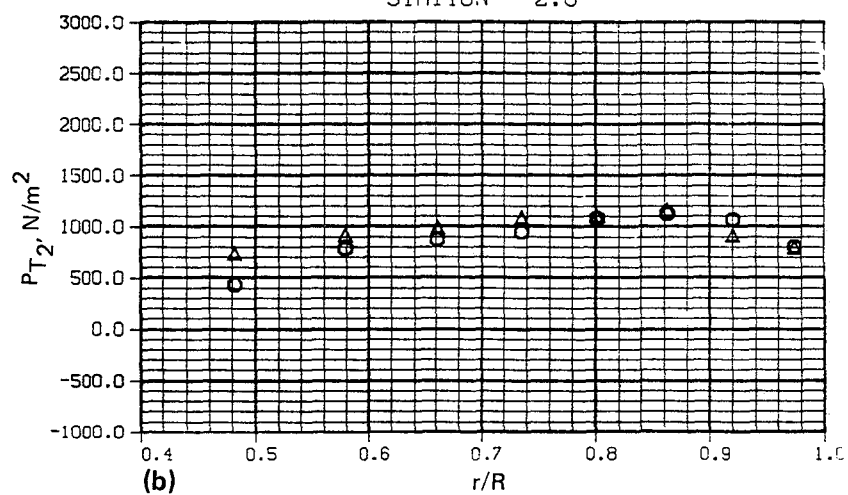
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 310. MASS FLOW: 74.20 slugs/sec

RPM: 722. STATION = 1.0



STATION = 2.0



STATION = 3.0

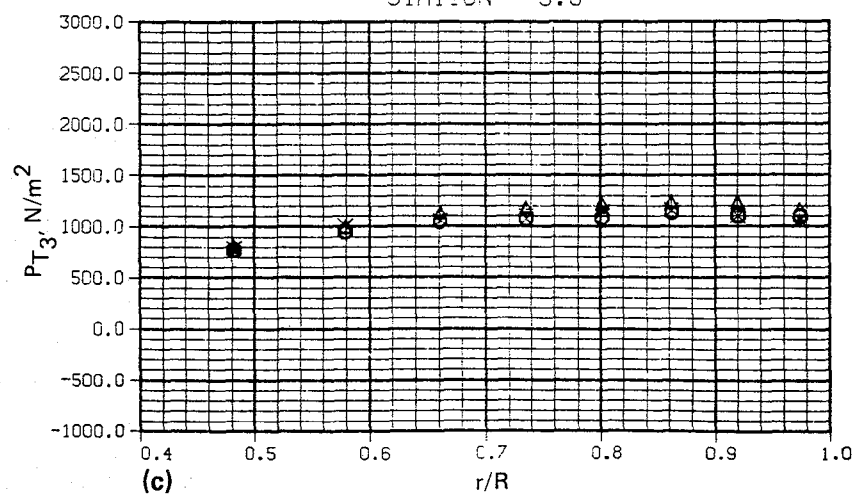


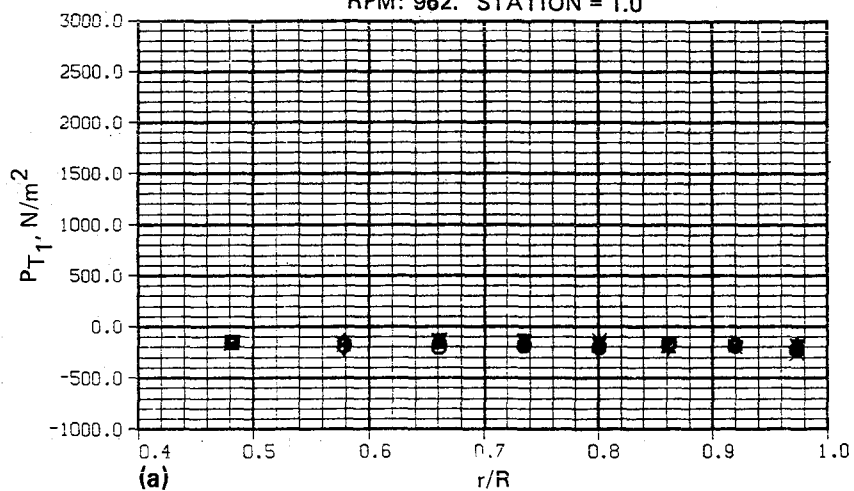
Figure D190.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

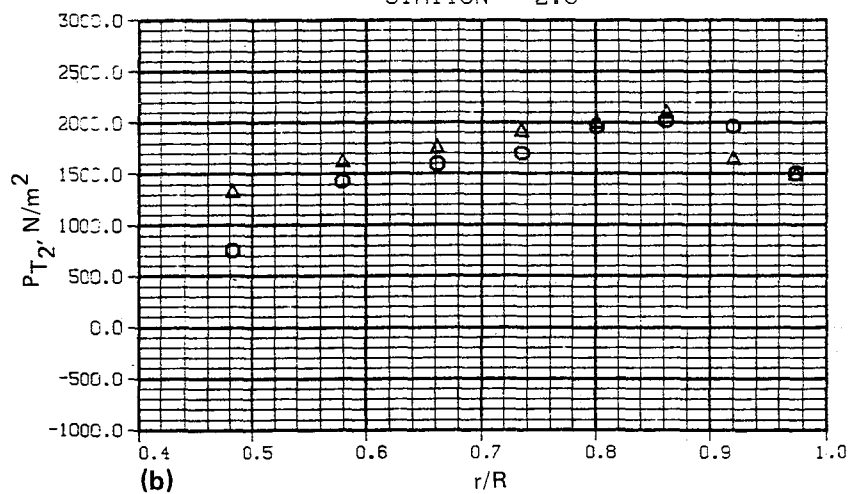
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 311. MASS FLOW: 101.06 slugs/sec

RPM: 962. STATION = 1.0



STATION = 2.0



STATION = 3.0

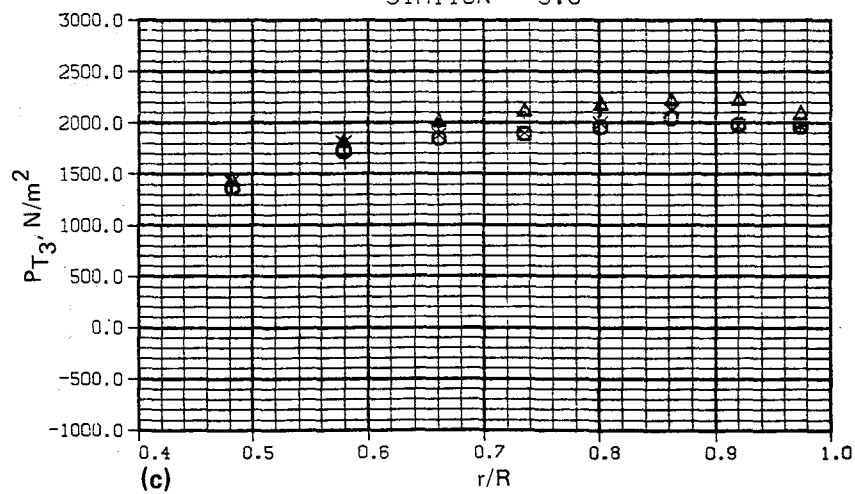


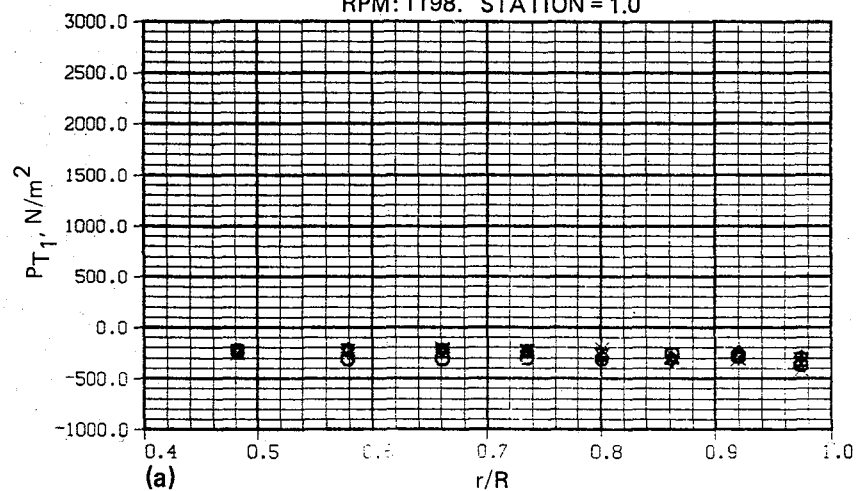
Figure D191.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

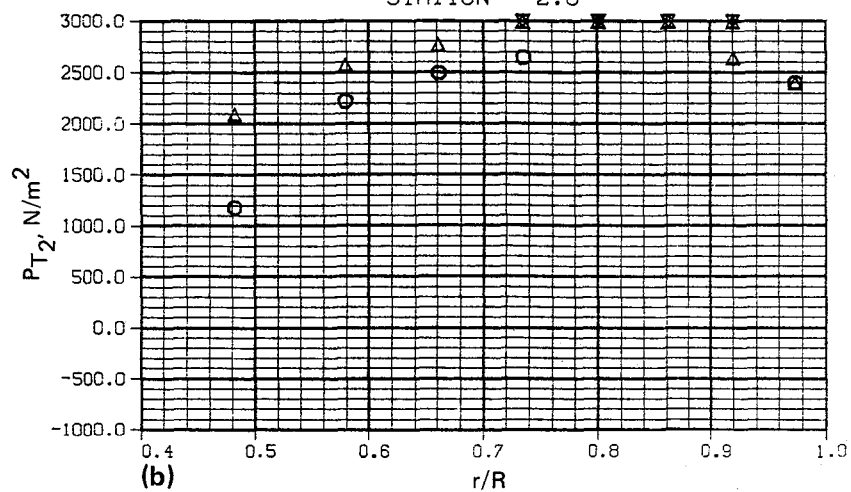
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 312. MASS FLOW: 128.34 slugs/sec

RPM: 1198. STATION = 1.0



STATION = 2.0



STATION = 3.0

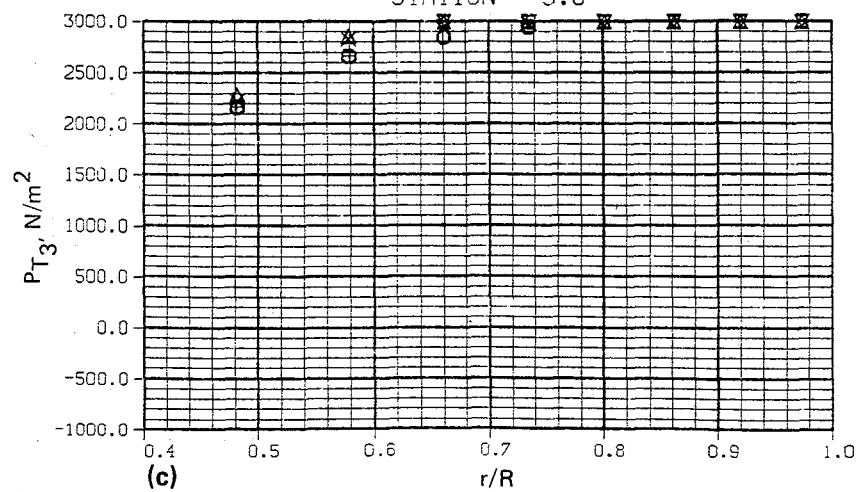
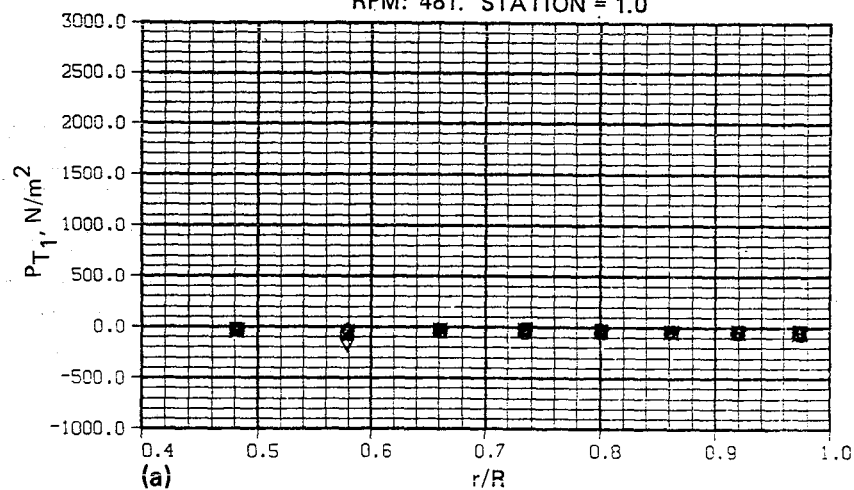
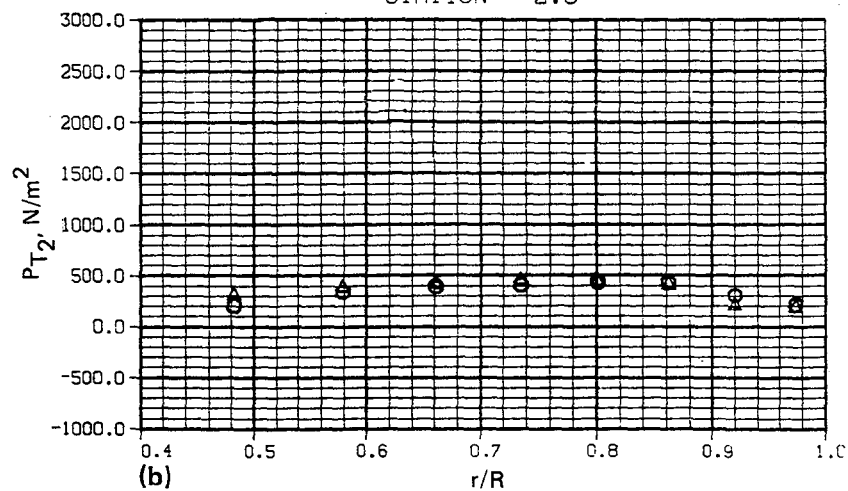


Figure D192.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 47.6
 RUN NO: 313. MASS FLOW: 44.90 slugs/sec
 RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

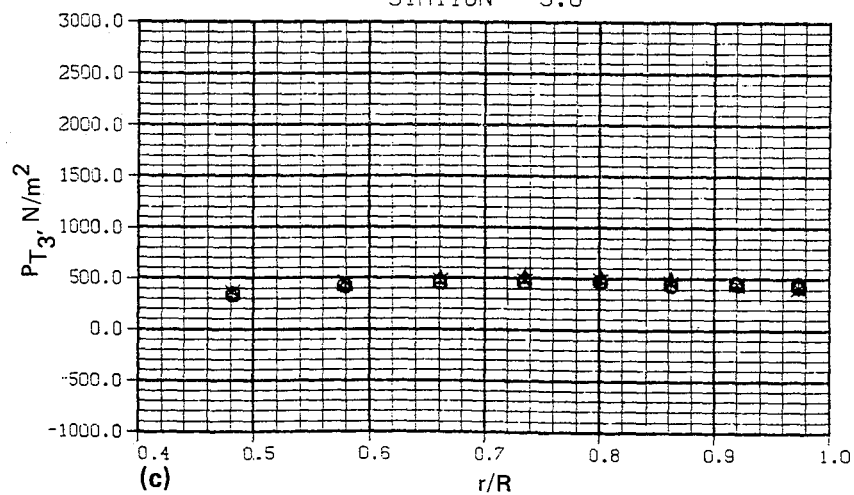


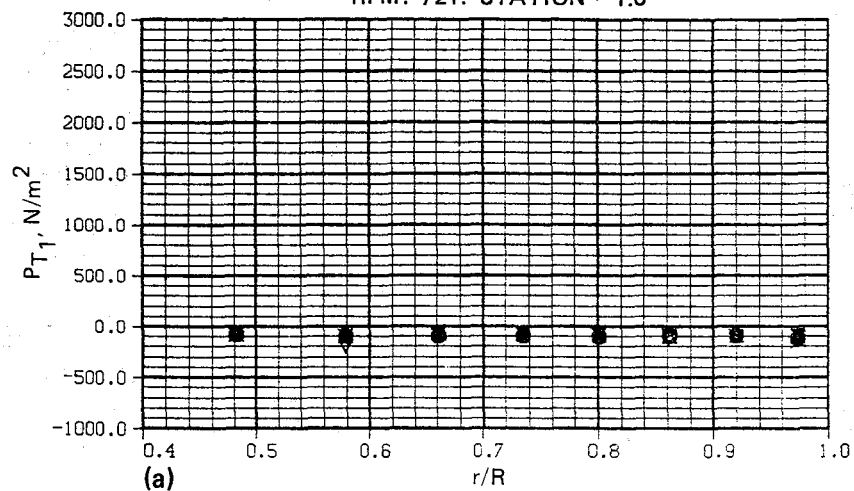
Figure D193.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

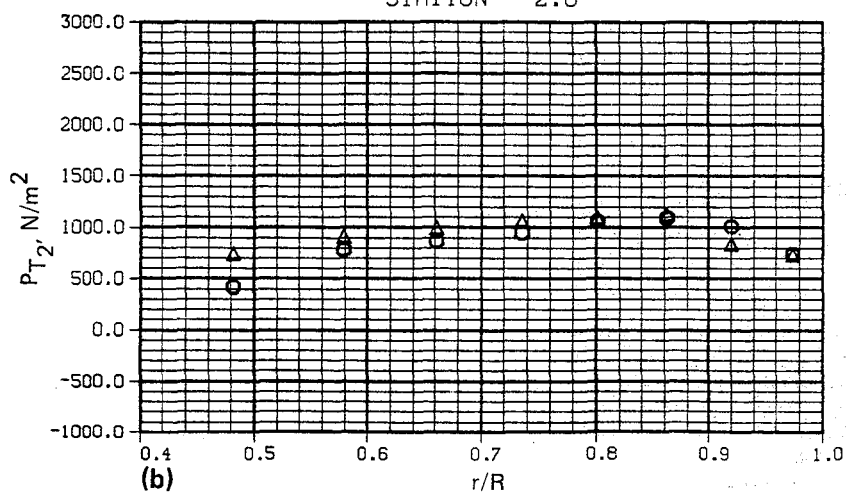
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 314. MASS FLOW: 70.80 slugs/sec

RPM: 721. STATION = 1.0



STATION = 2.0



STATION = 3.0

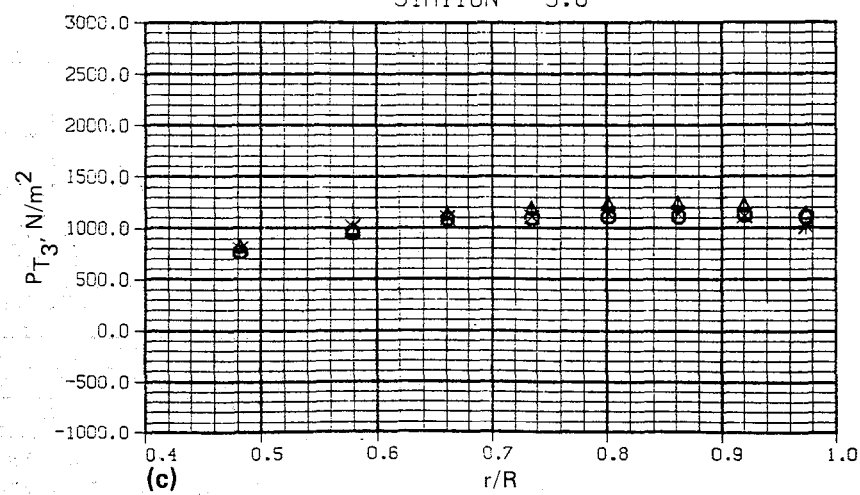


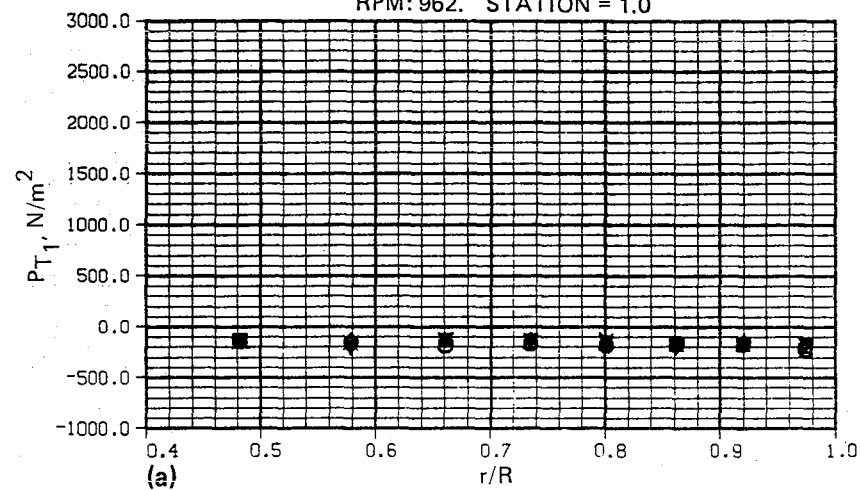
Figure D194.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

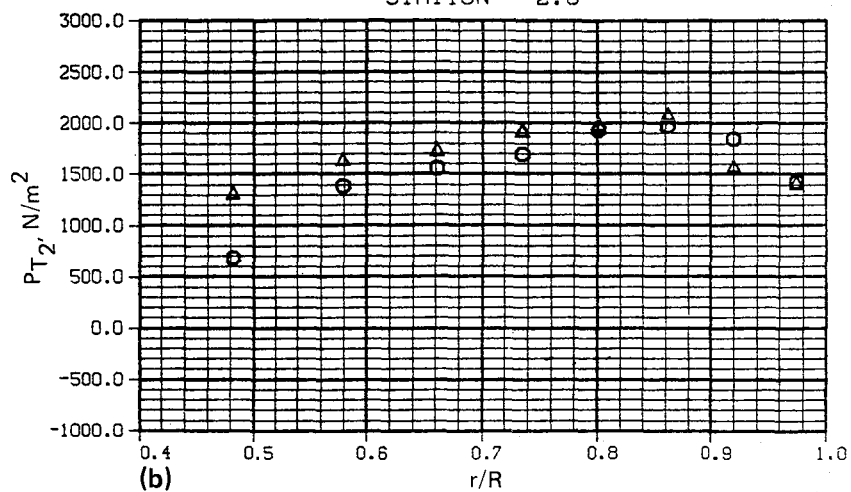
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 315. MASS FLOW: 96.46 slugs/sec

RPM: 962. STATION = 1.0



STATION - 2.0



STATION - 3.0

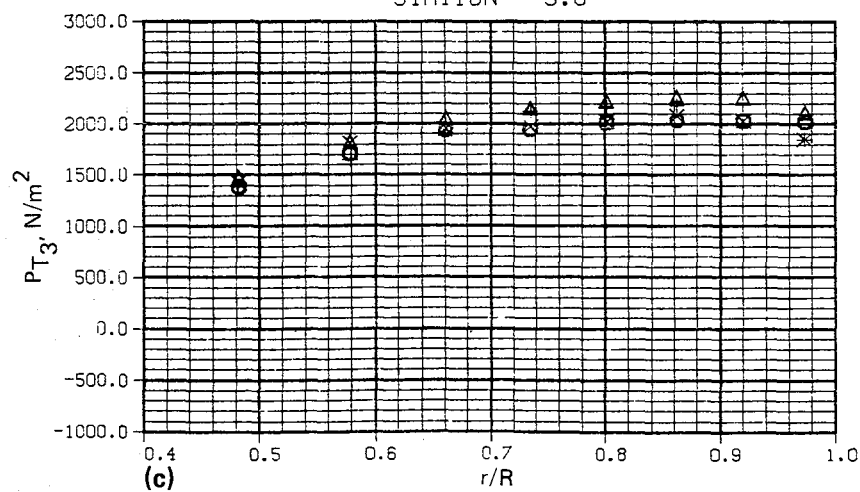


Figure D195.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 316. MASS FLOW: 123.21 slugs/sec

RPM: 1205. STATION = 1.0

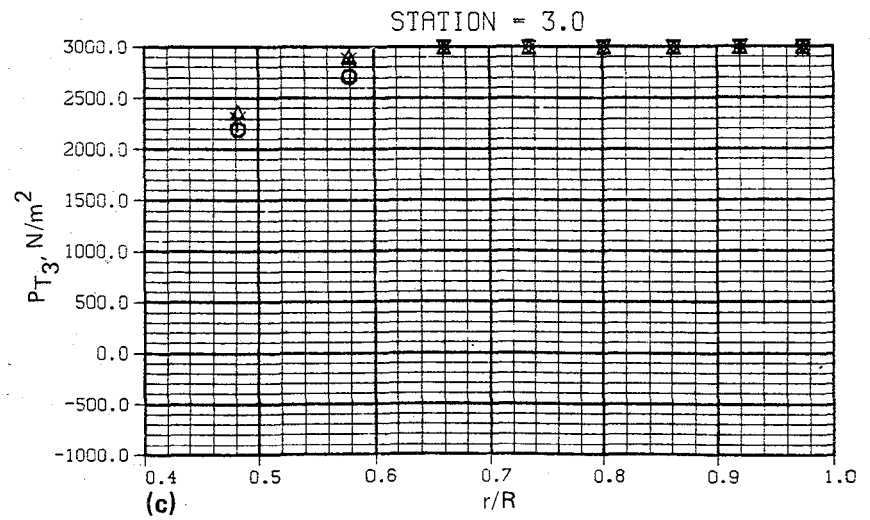
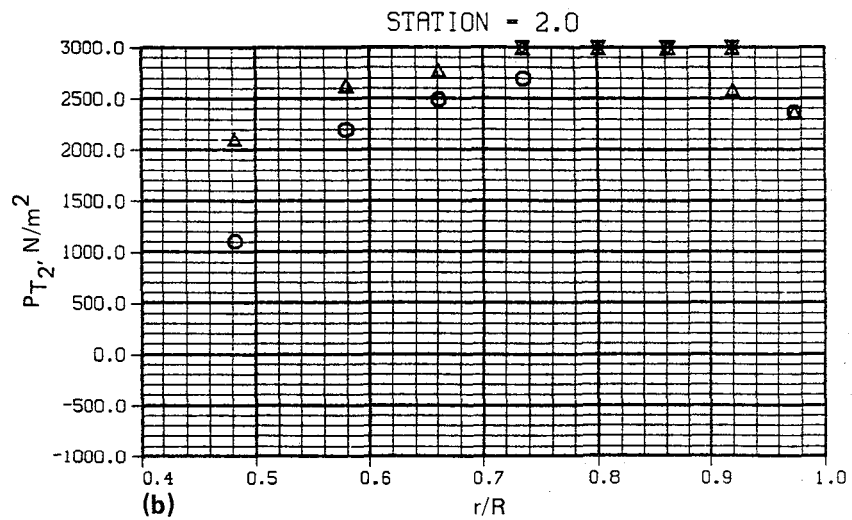
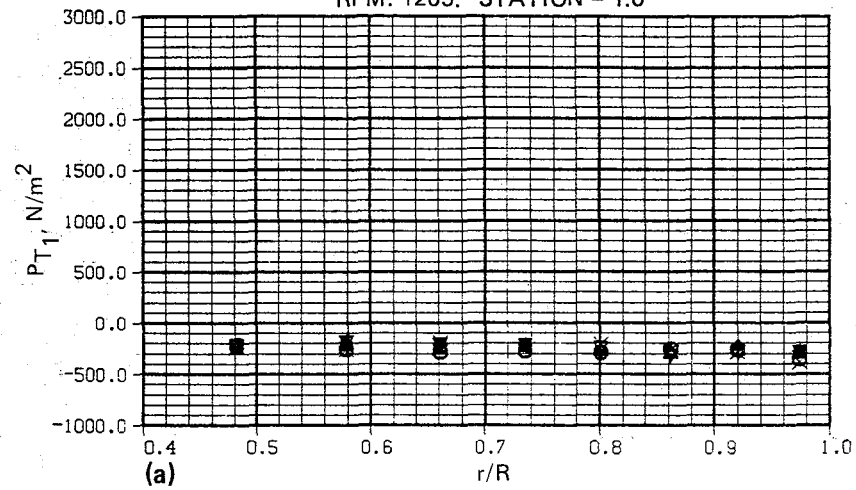


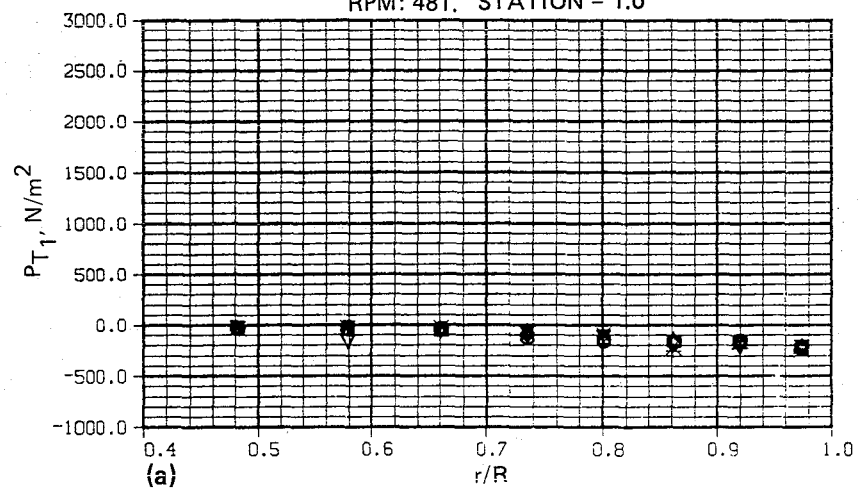
Figure D196.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

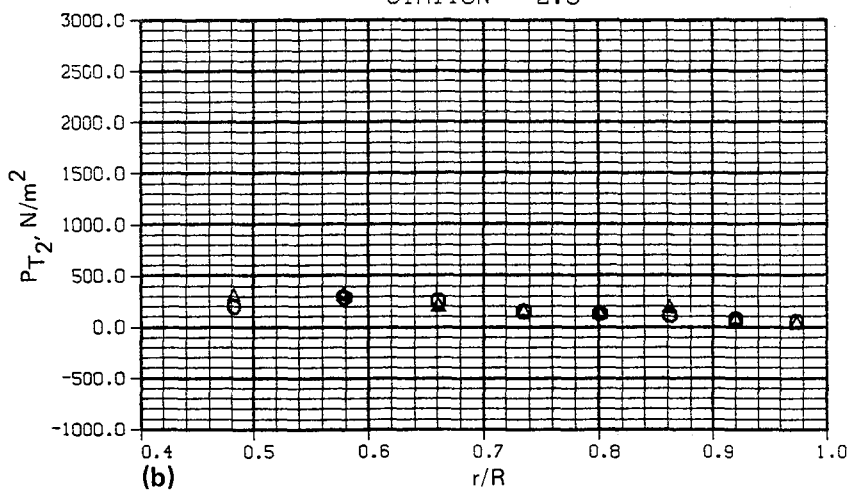
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 317. MASS FLOW: 21.13 slugs/sec

RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

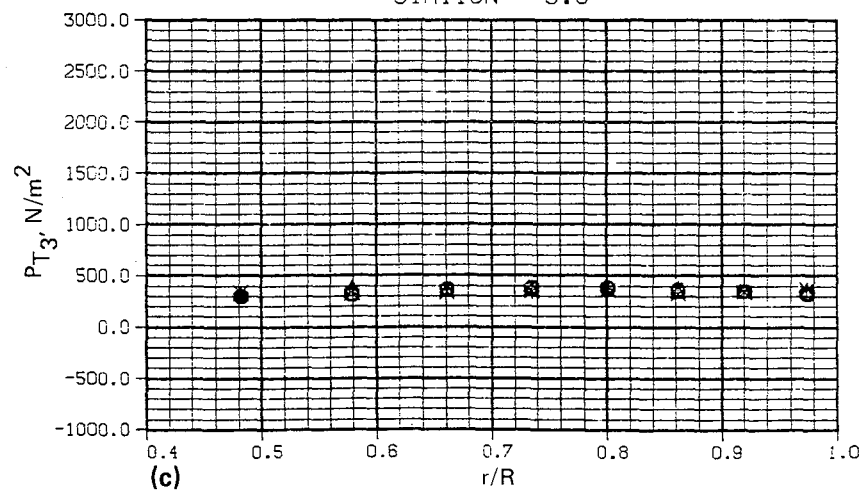


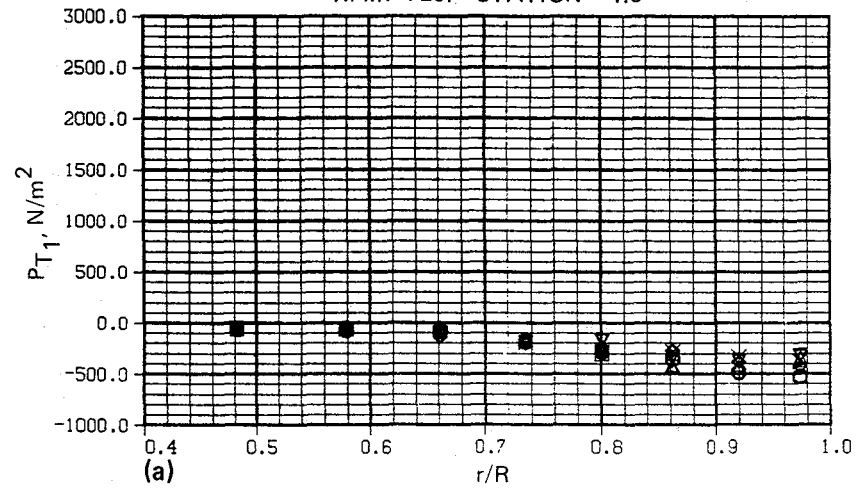
Figure D197.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

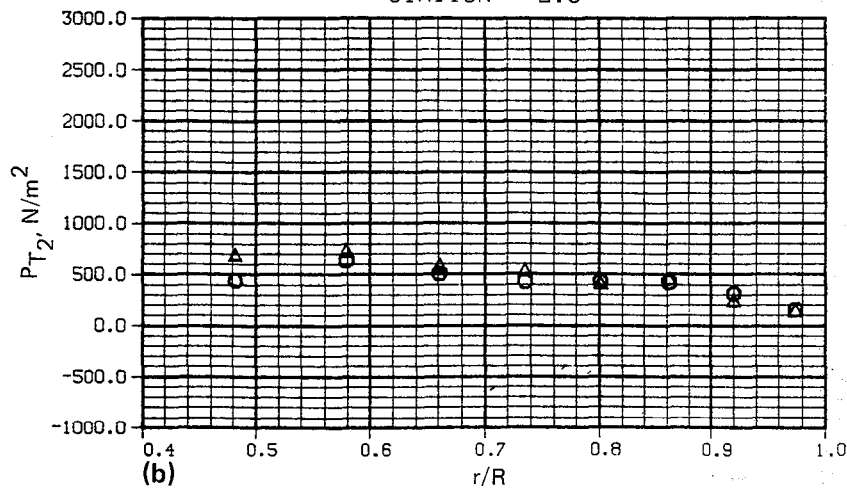
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 318. MASS FLOW: 40.83 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

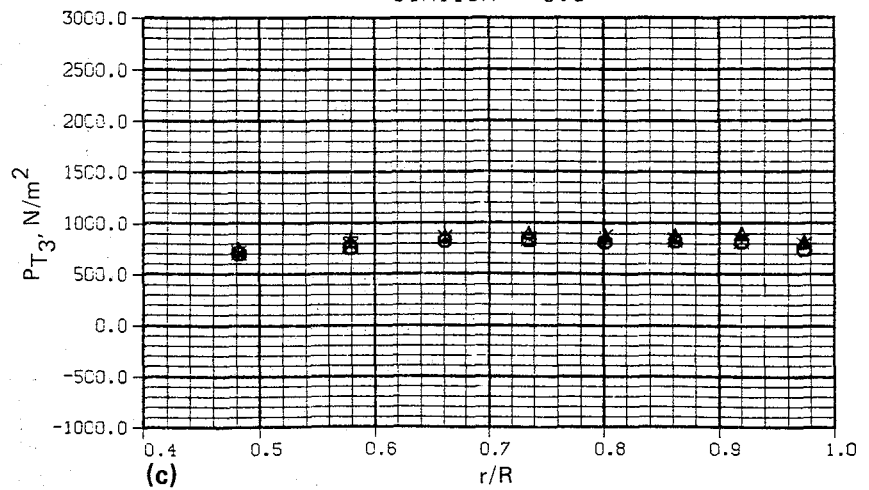


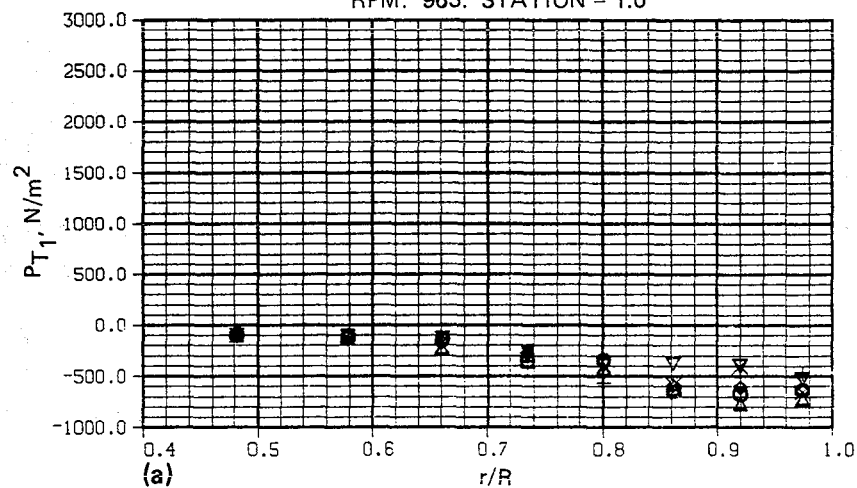
Figure D198.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

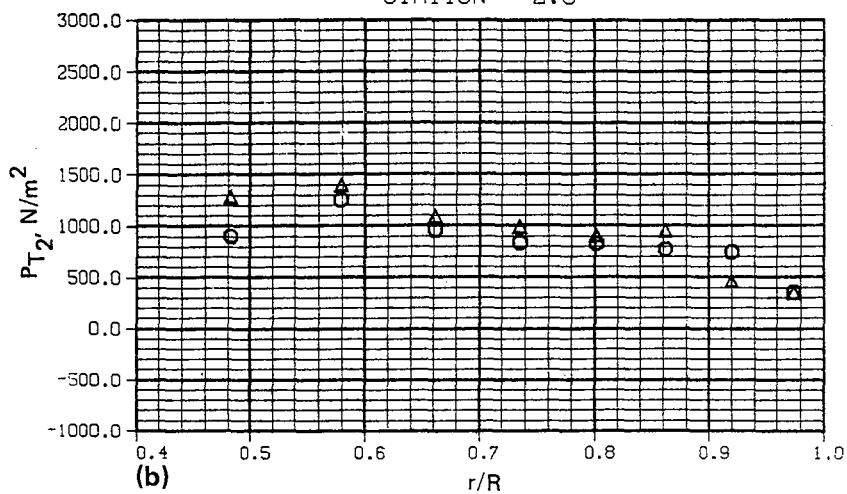
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 319. MASS FLOW: 68.12 slugs/sec

RPM: 963. STATION = 1.0



STATION = 2.0



STATION = 3.0

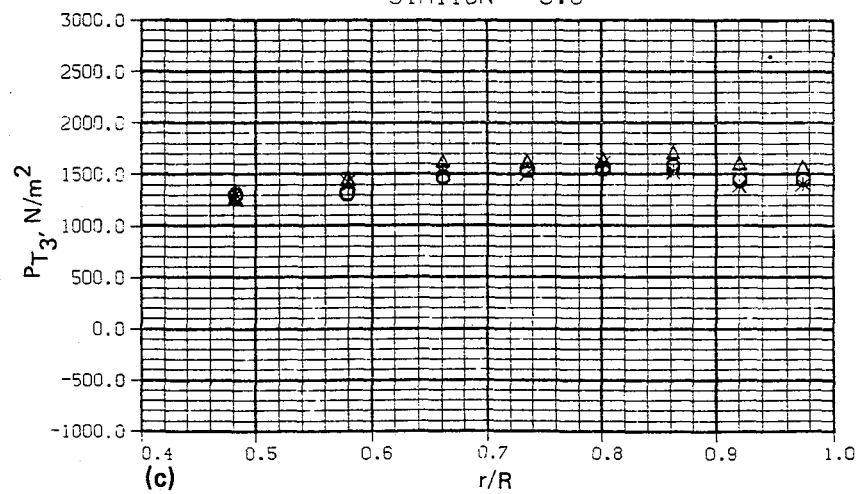


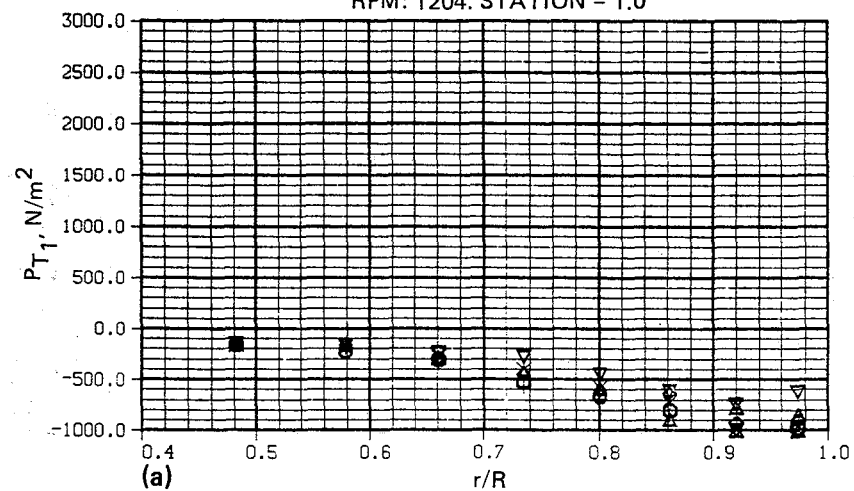
Figure D199.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

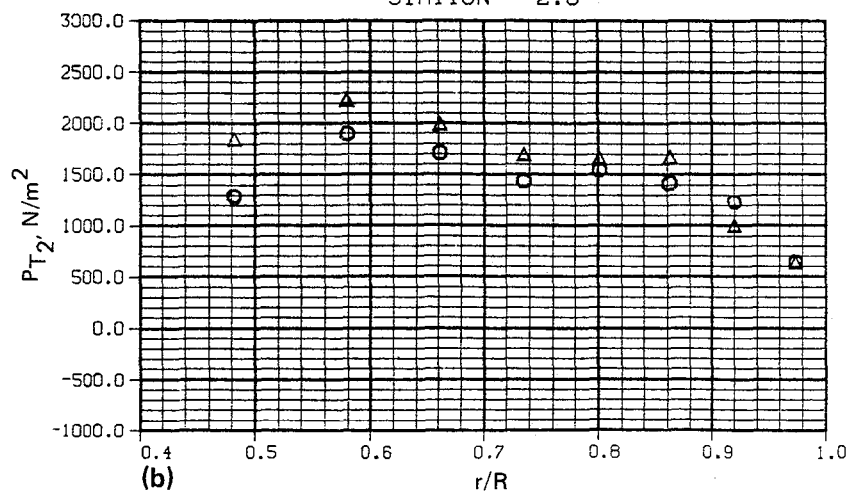
BLADE TYPE: 2. BLADE ANGLE: 47.6

RUN NO: 320. MASS FLOW: 90.35 slugs/sec

RPM: 1204. STATION = 1.0



STATION = 2.0



STATION = 3.0

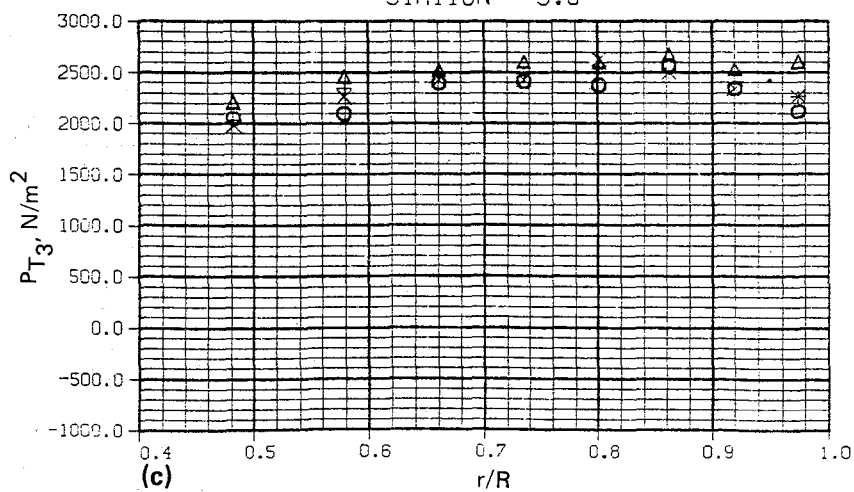


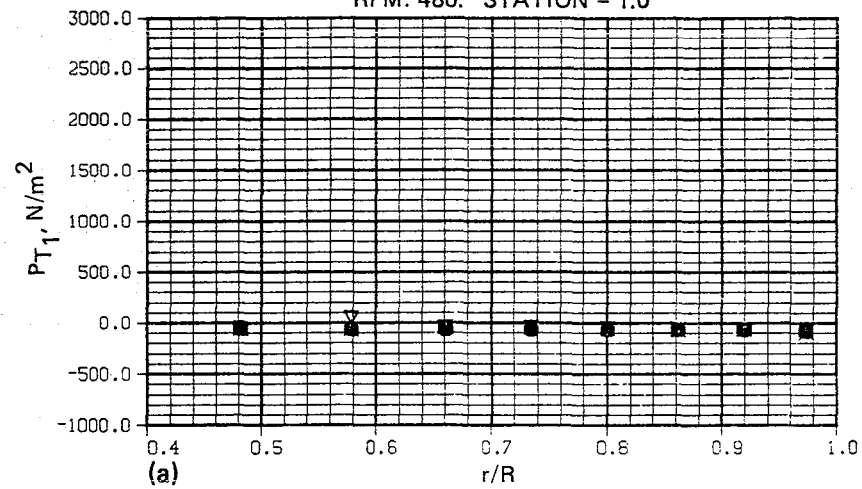
Figure D200.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

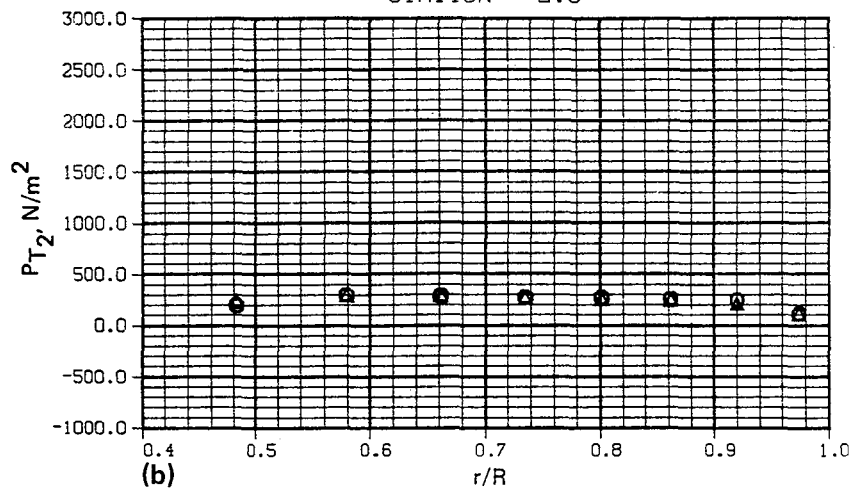
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 325. MASS FLOW: 56.62 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

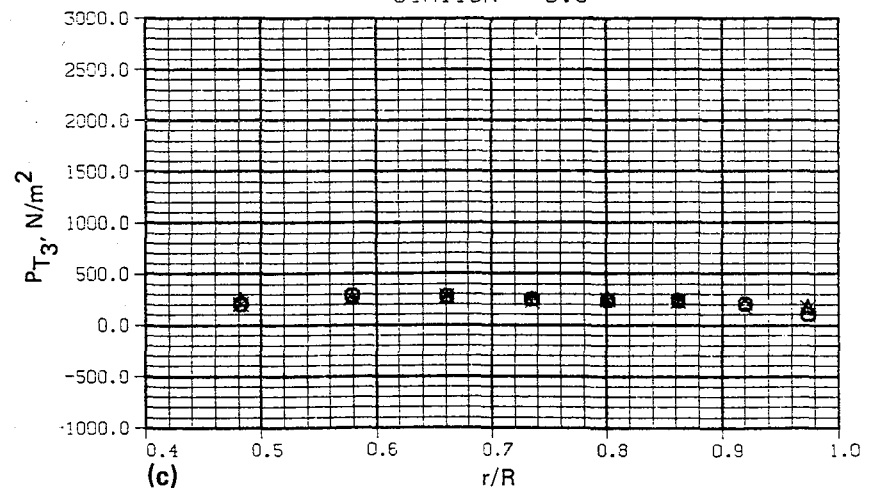


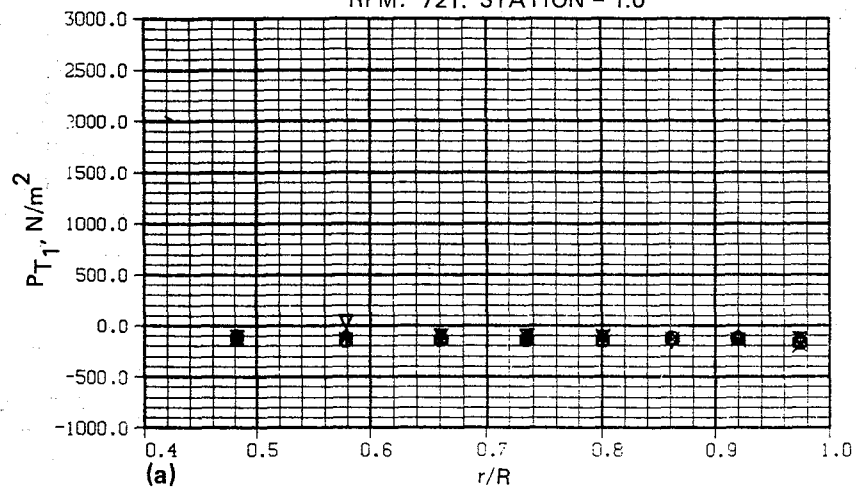
Figure D201.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

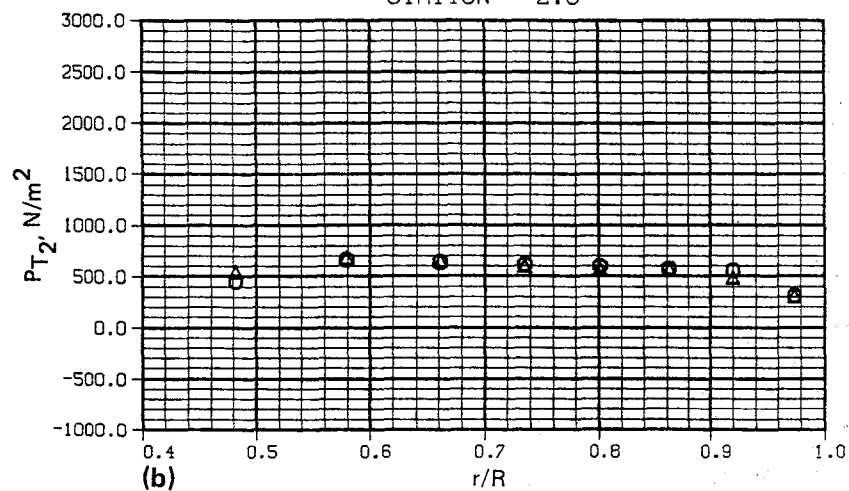
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 326. MASS FLOW: 85.29 slugs/sec

RPM: 721. STATION = 1.0



STATION = 2.0



STATION = 3.0

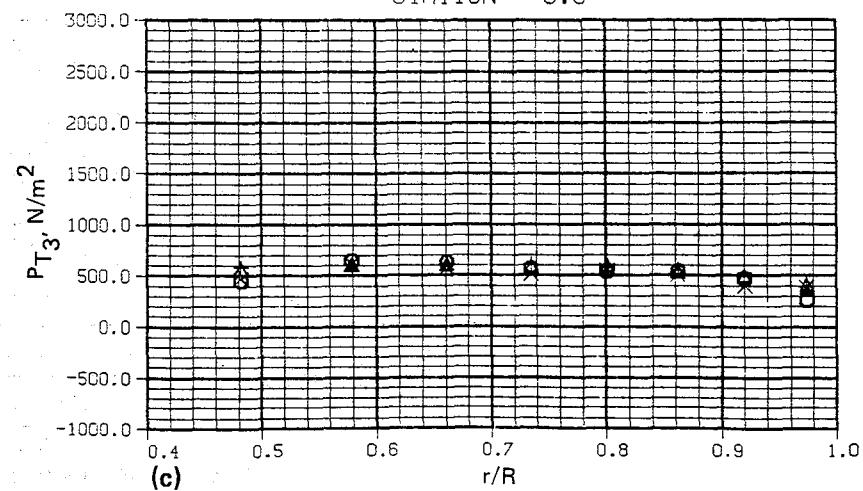
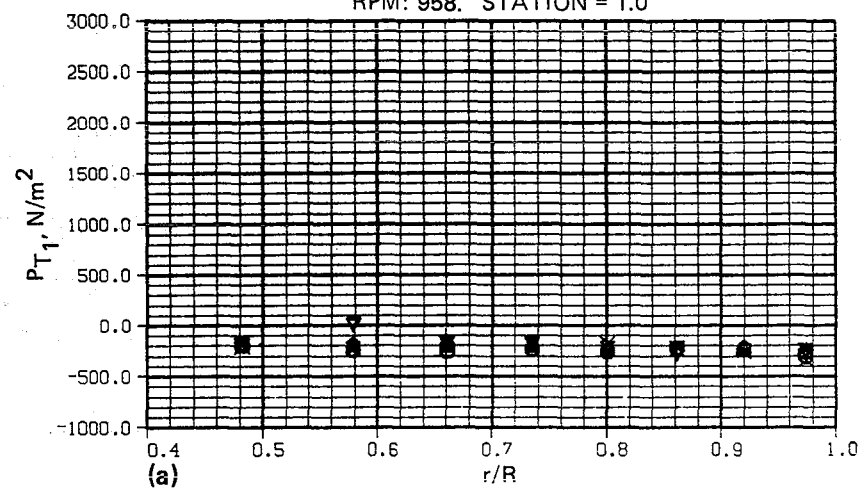
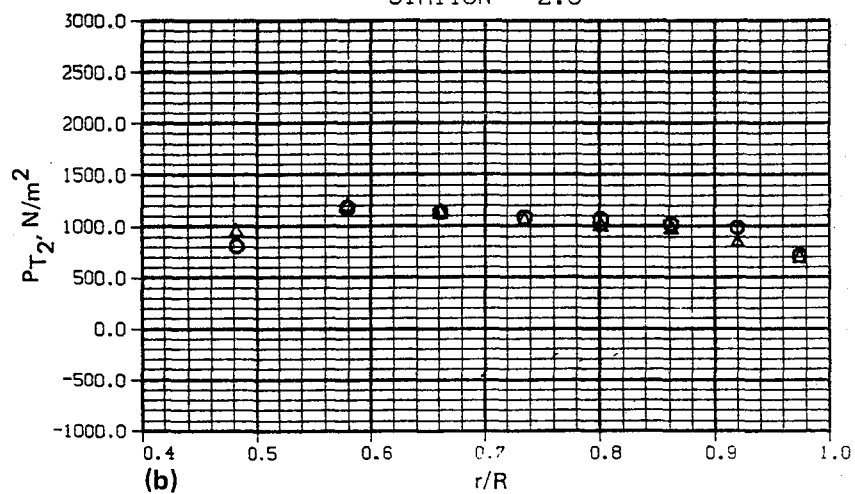


Figure D202.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 327. MASS FLOW: 114.45 slugs/sec
 RPM: 958. STATION = 1.0



STATION = 2.0



STATION = 3.0

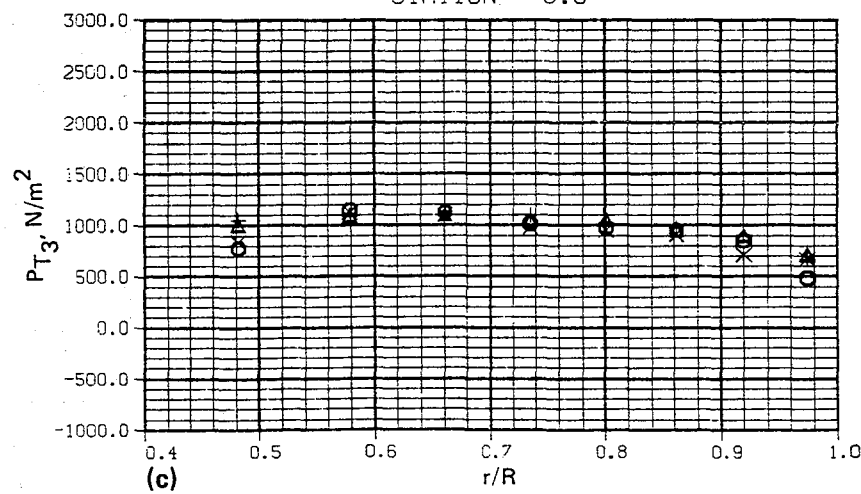


Figure D203.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 328. MASS FLOW: 144.07 slugs/sec

RPM: 1201. STATION = 1.0

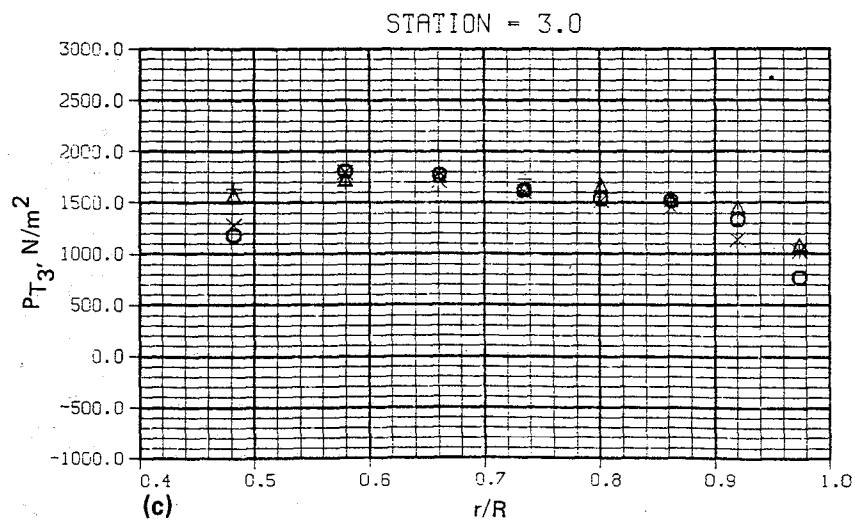
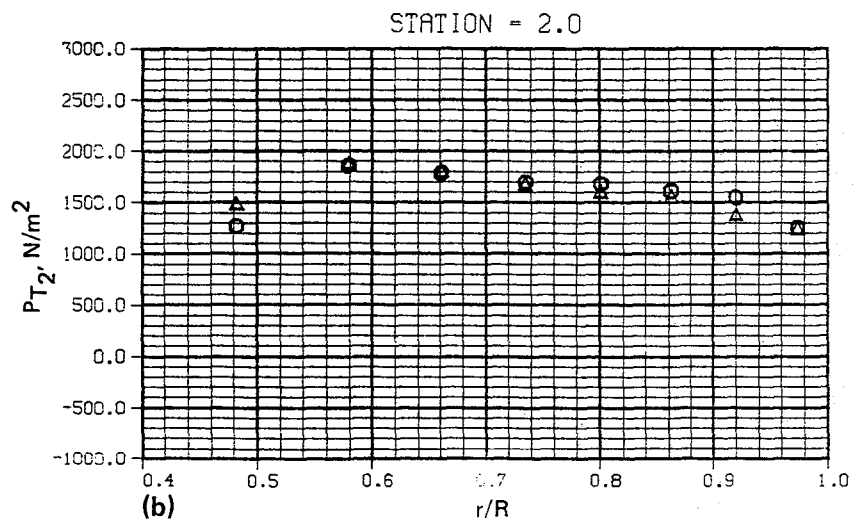
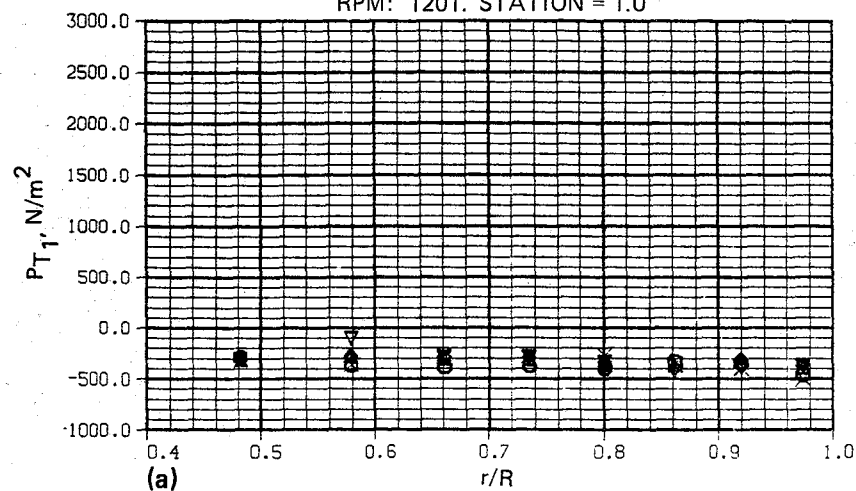


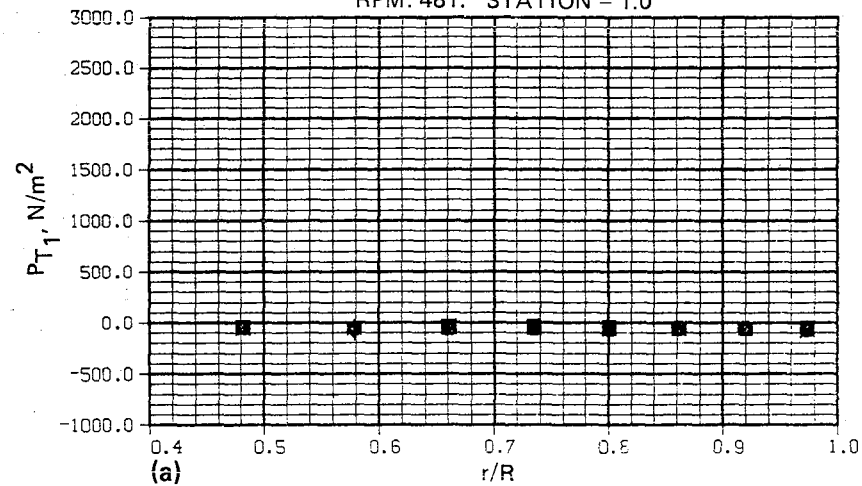
Figure D204.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

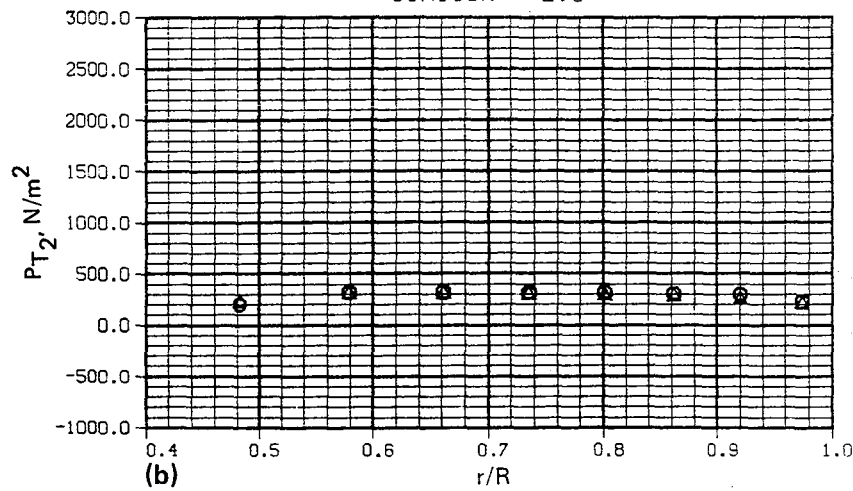
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 329. MASS FLOW: 53.14 slugs/sec

RPM: 481. STATION = 1.0



STATION = 2.0



STATION = 3.0

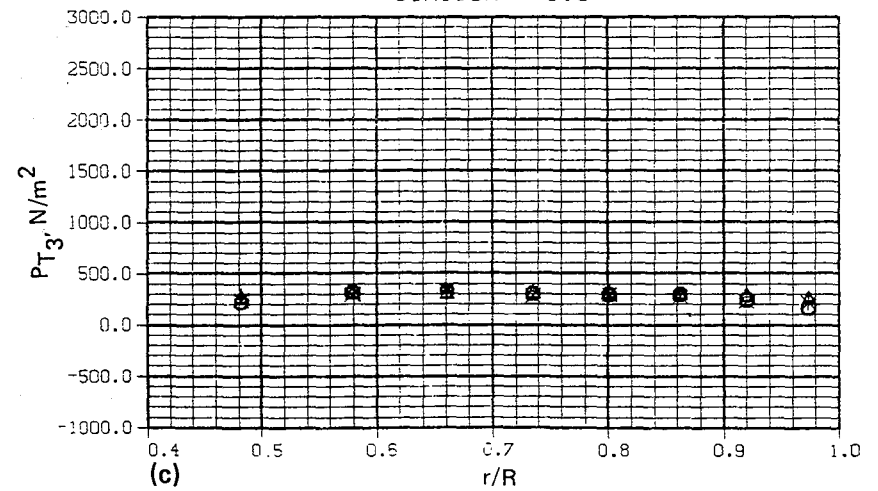


Figure D205.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 330. MASS FLOW: 80.56 slugs/sec

RPM: 724. STATION = 1.0

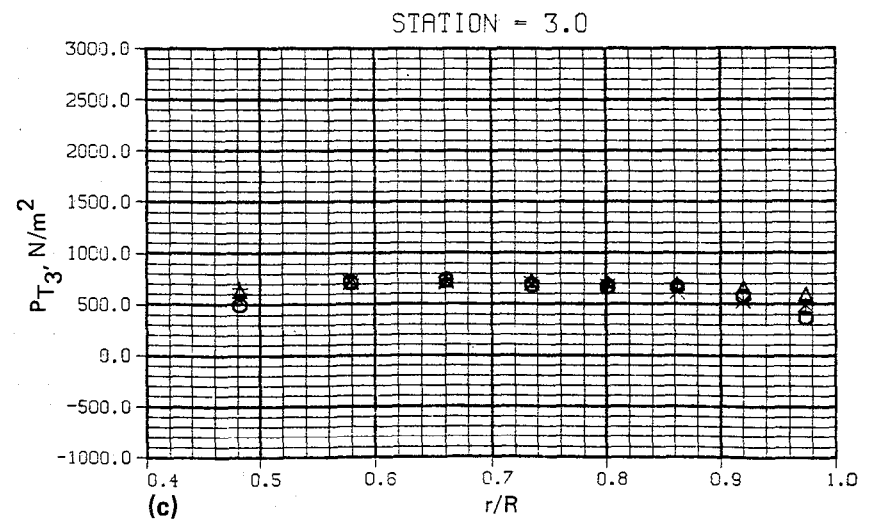
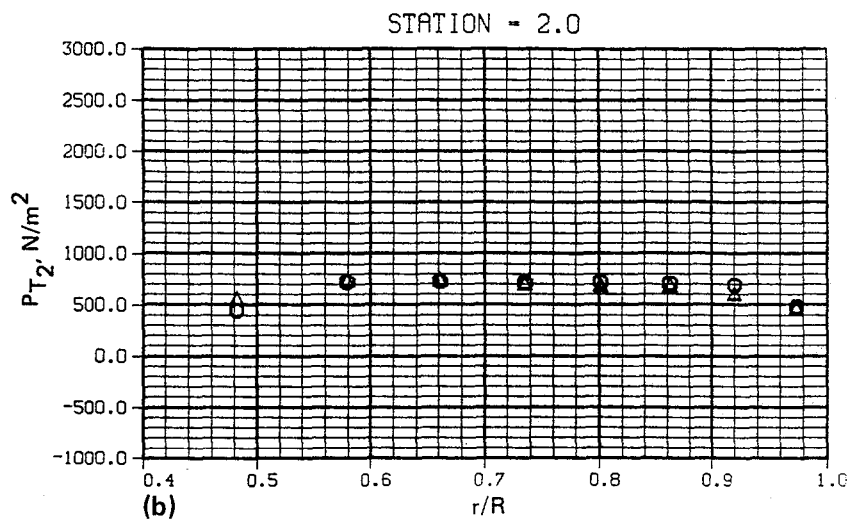
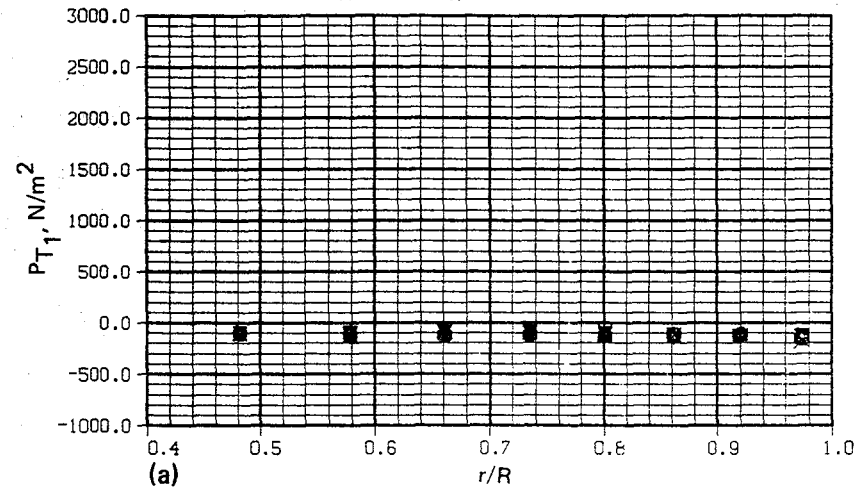
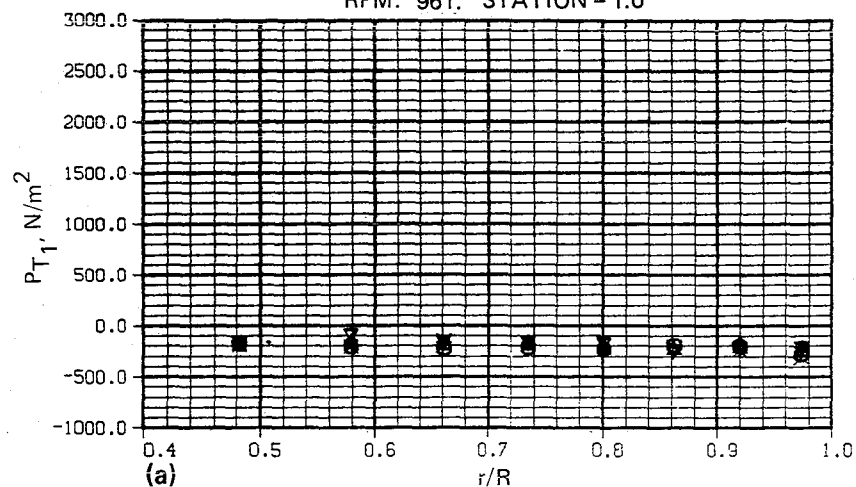
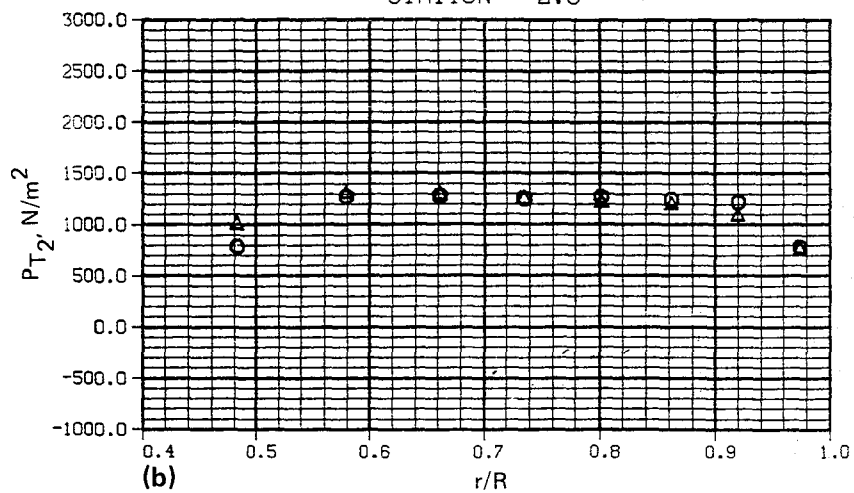


Figure D206.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 331. MASS FLOW: 107.77 slugs/sec
 RPM: 961. STATION = 1.0



STATION = 2.0



STATION = 3.0

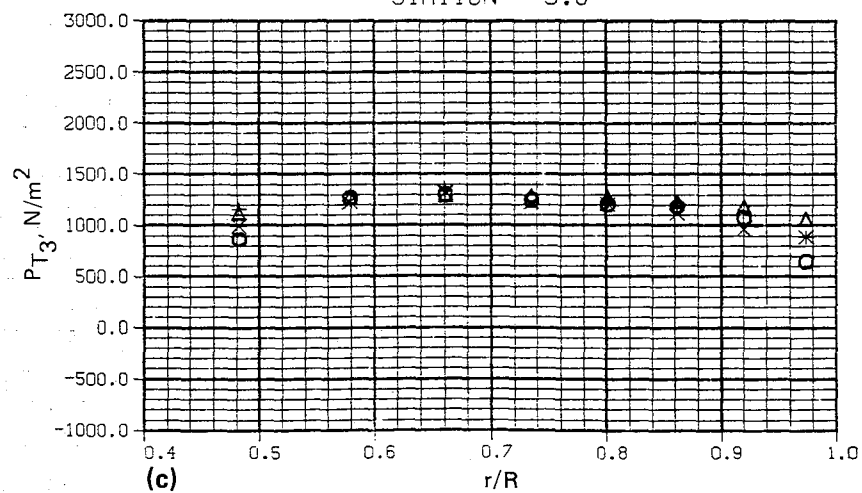


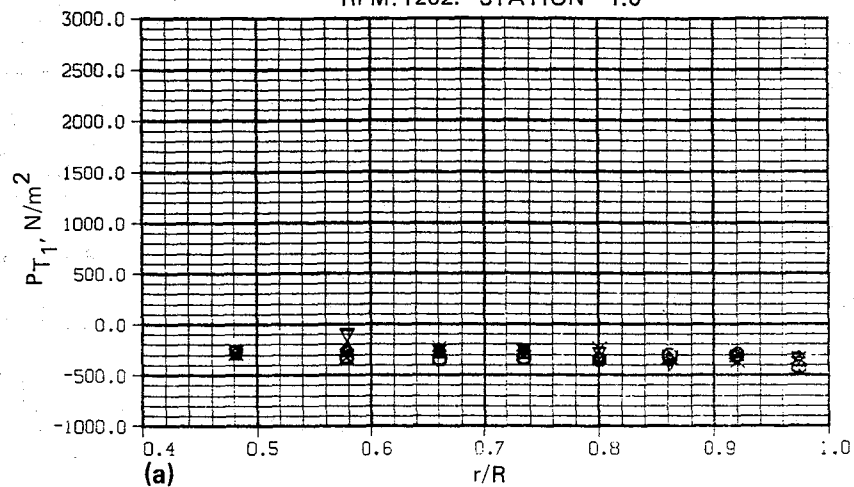
Figure D207.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

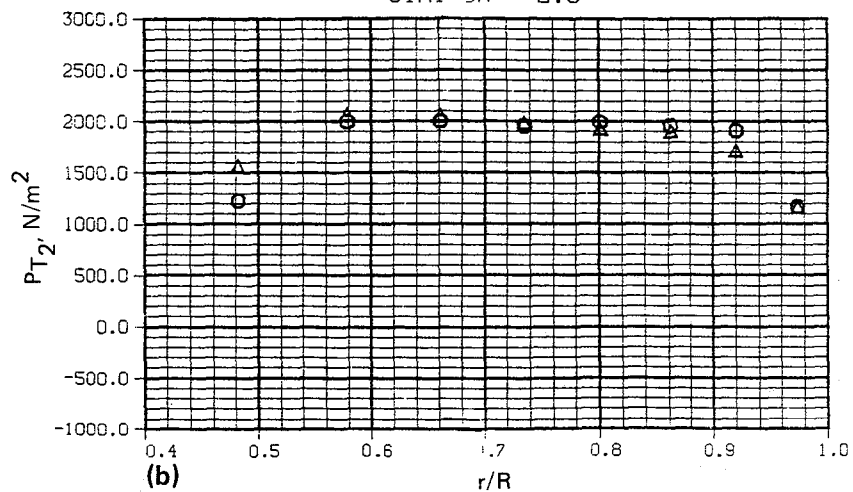
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 332. MASS FLOW: 136.21 slugs/sec

RPM: 1202. STATION = 1.0



STATION = 2.0



STATION = 3.0

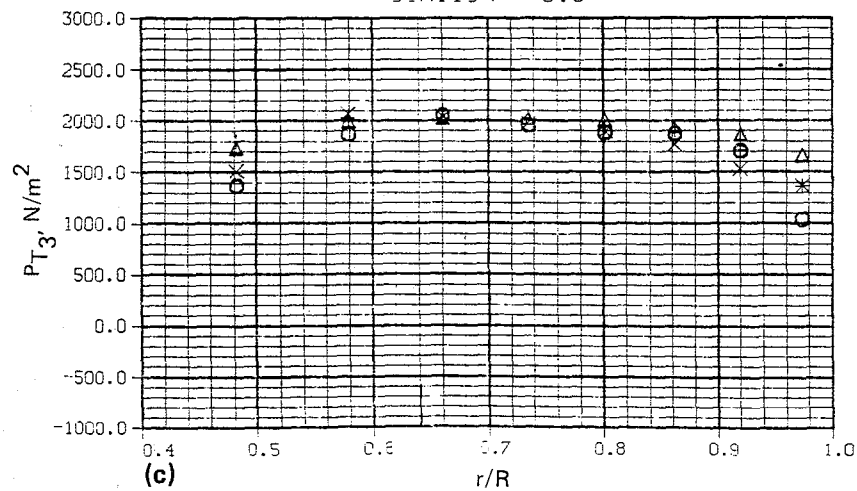


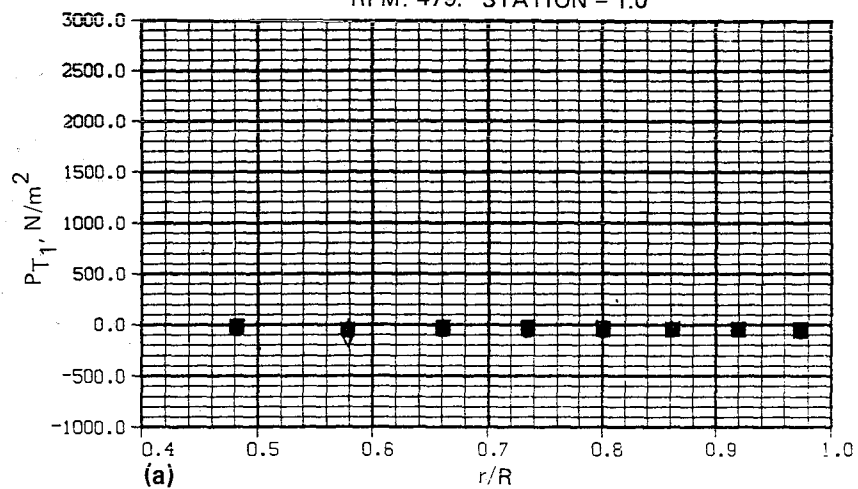
Figure D208.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

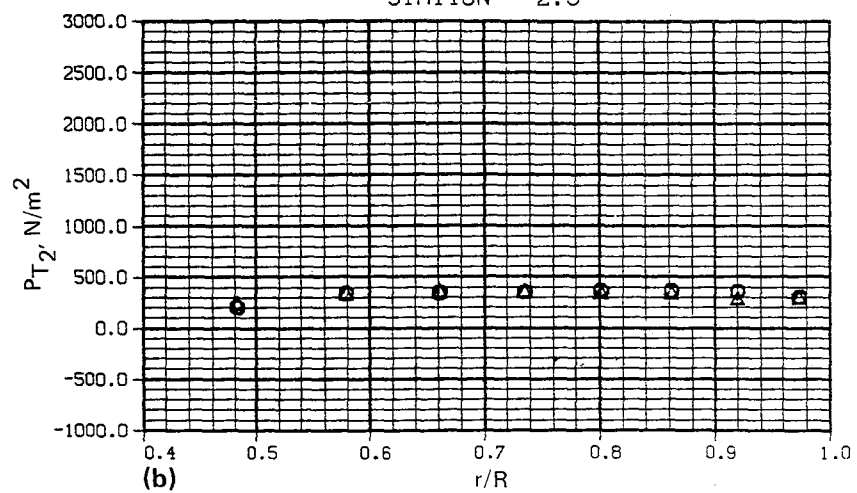
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 333. MASS FLOW: 49.74 slugs/sec

RPM: 479. STATION = 1.0



STATION - 2.0



STATION - 3.0

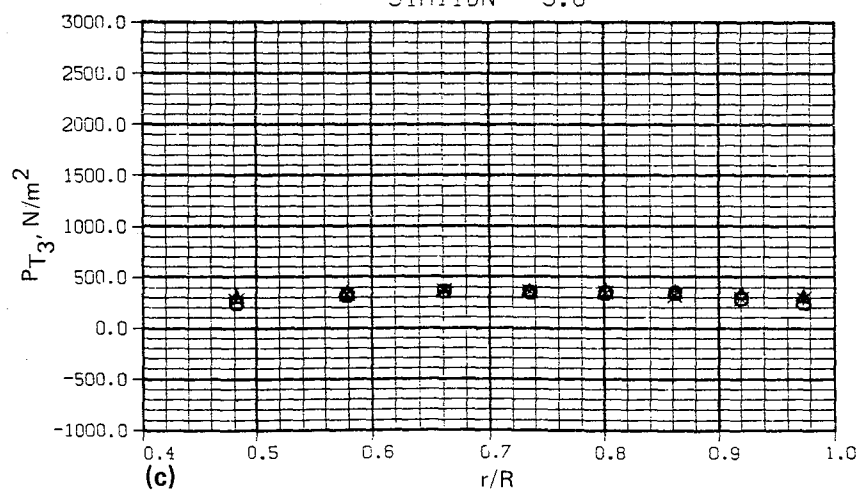


Figure D209.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 334. MASS FLOW: 75.04 slugs/sec

RPM: 717. STATION = 1.0

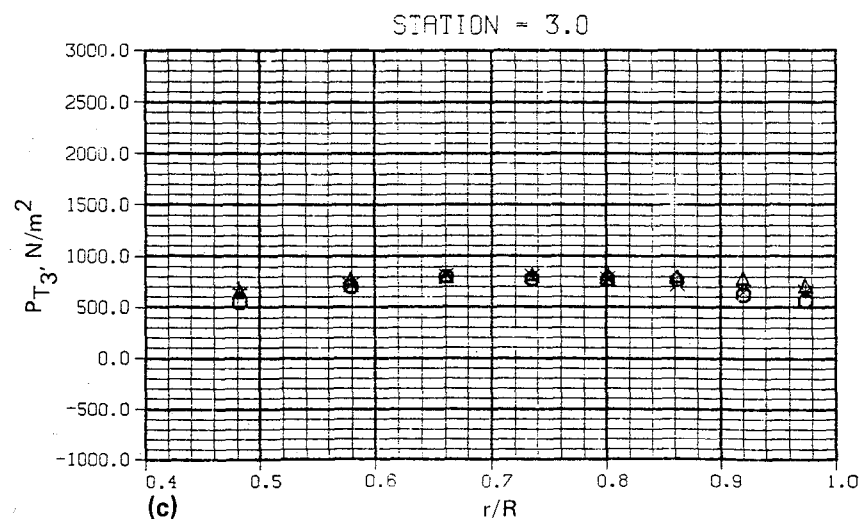
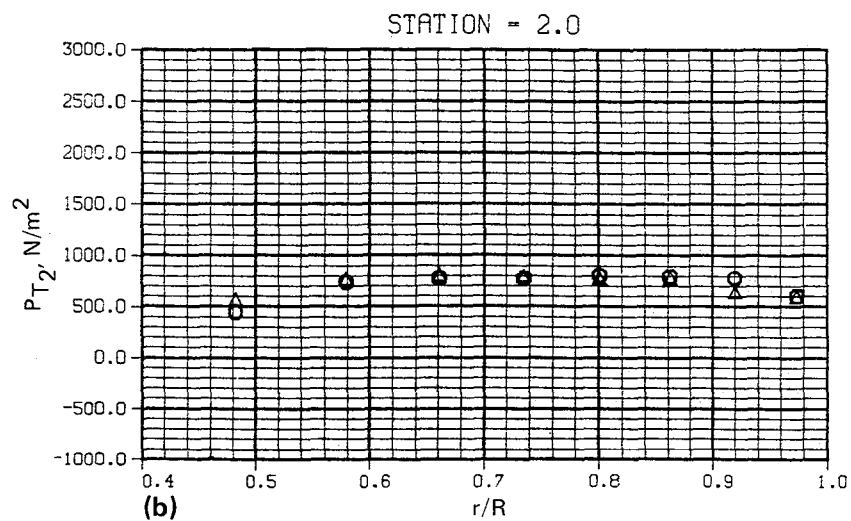
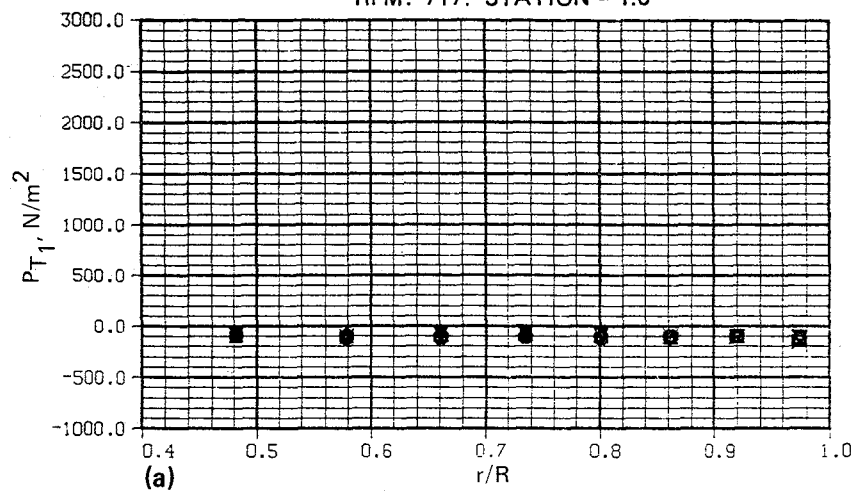
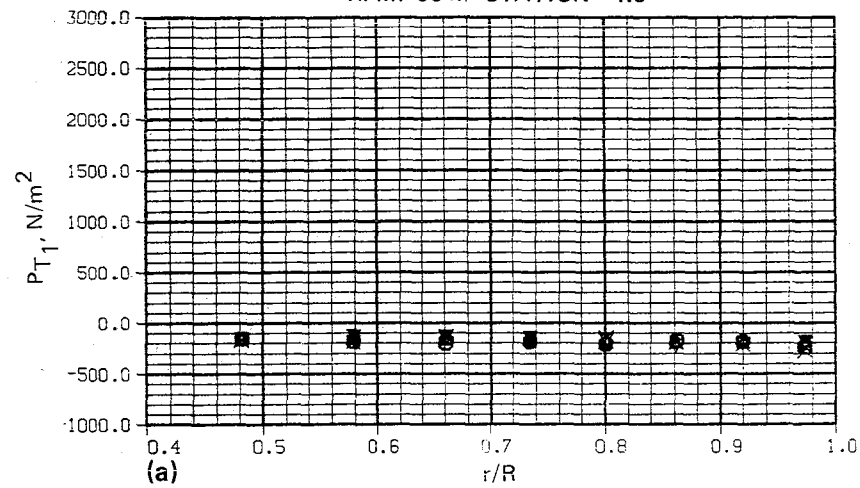
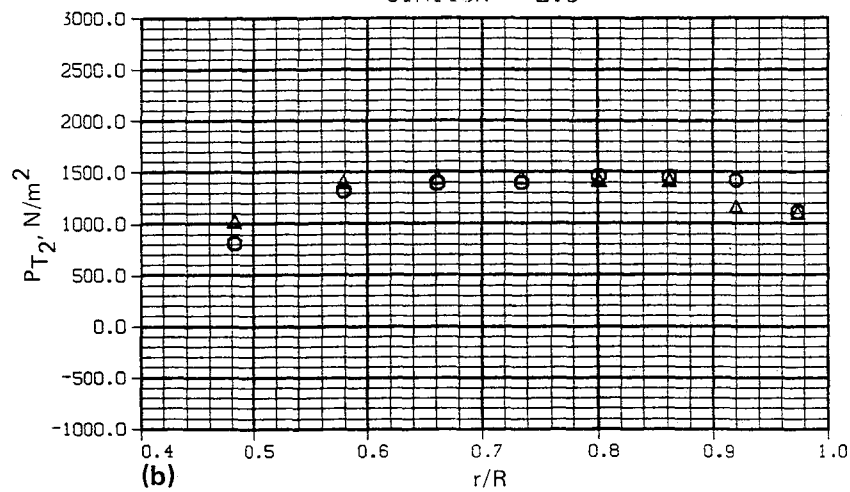


Figure D210.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 335. MASS FLOW: 102.24 slugs/sec
 RPM: 964. STATION = 1.0



STATION = 2.0



STATION = 3.0

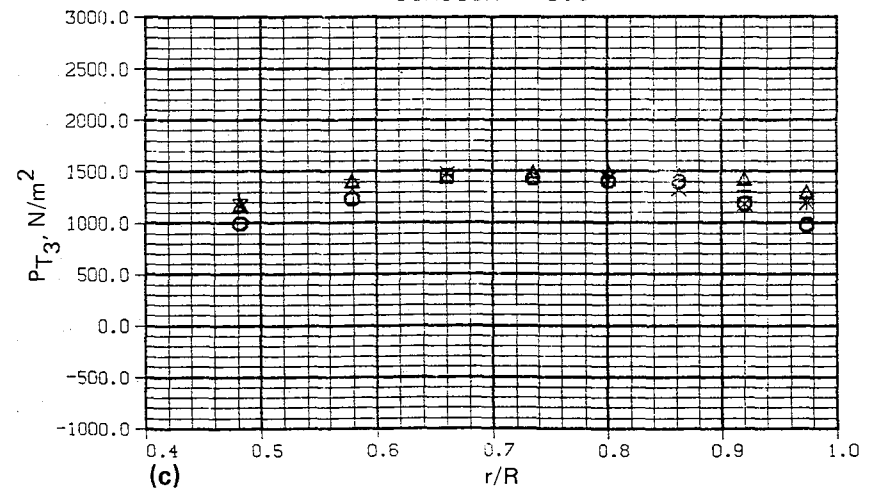


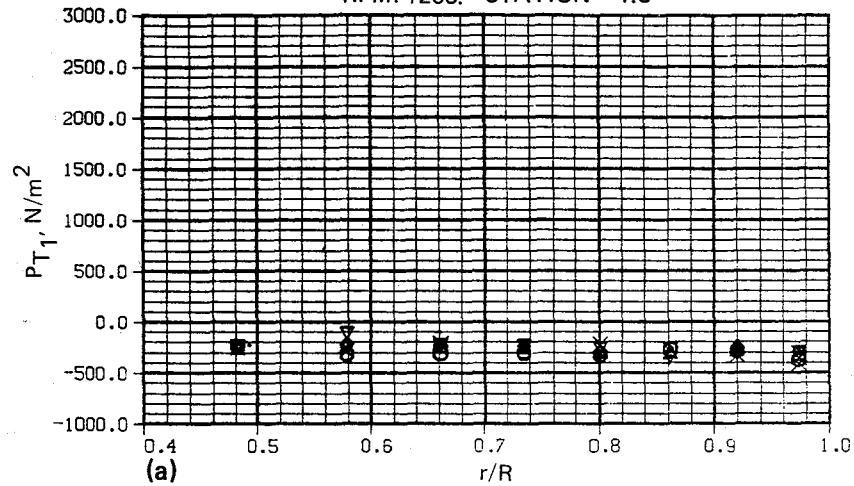
Figure D211.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

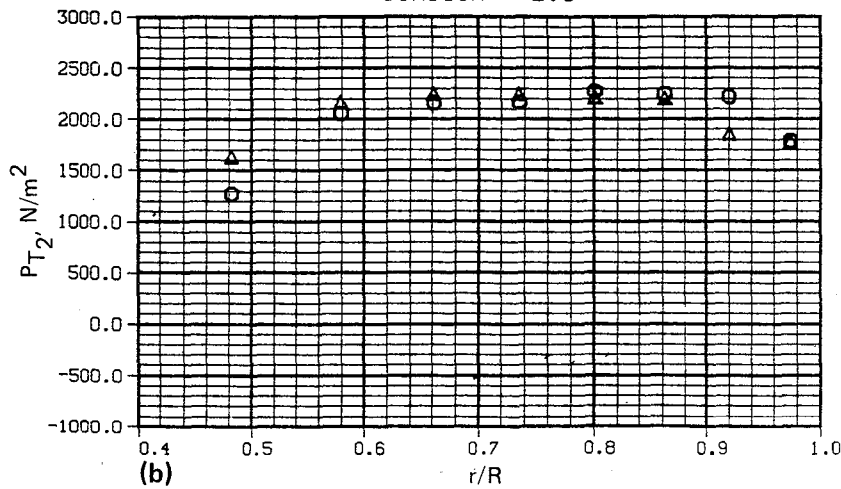
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 336. MASS FLOW: 128.53 slugs/sec

RPM: 1203. STATION = 1.0



STATION - 2.0



STATION - 3.0

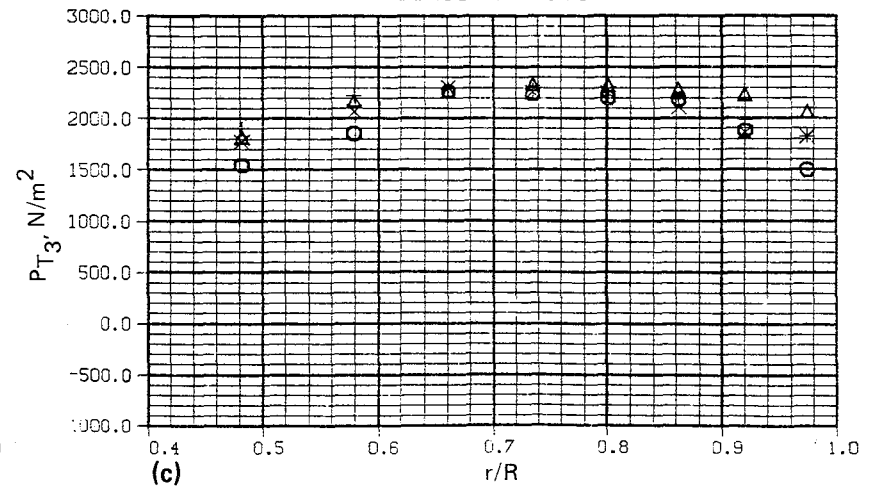


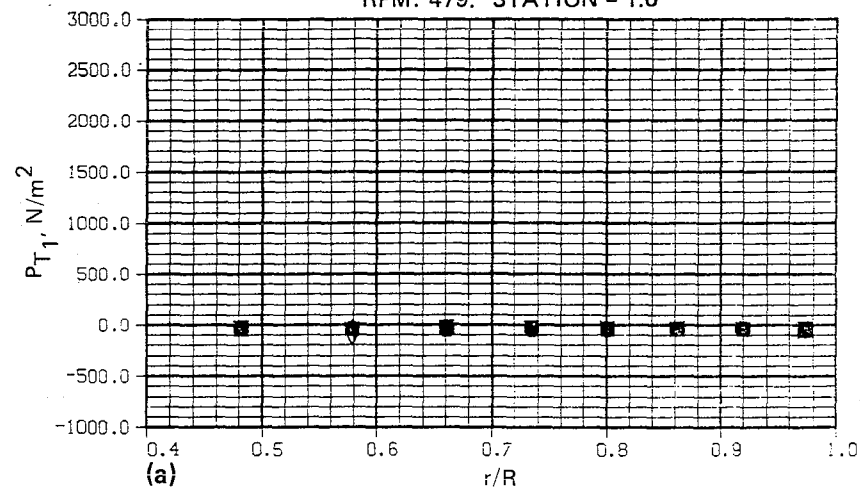
Figure D212.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

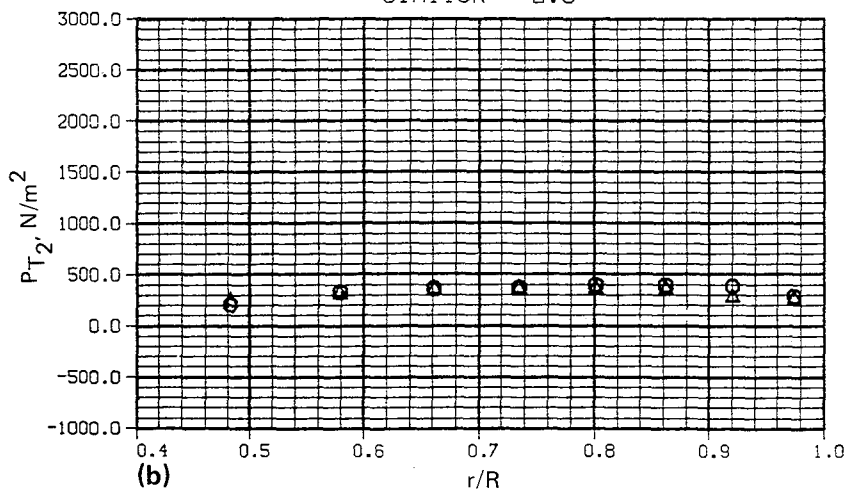
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 337. MASS FLOW: 47.31 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

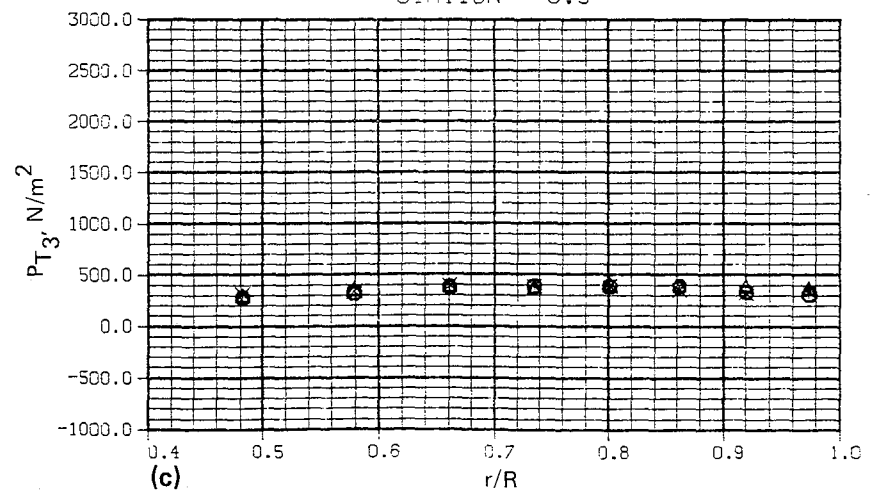


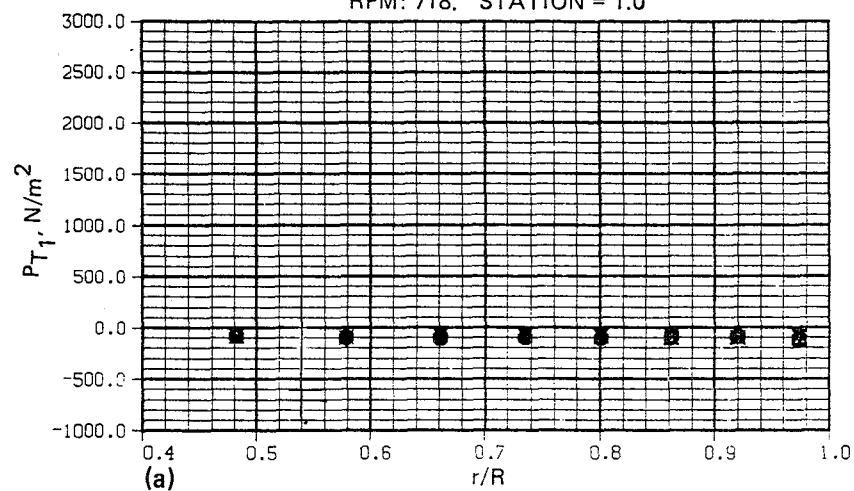
Figure D213.-- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

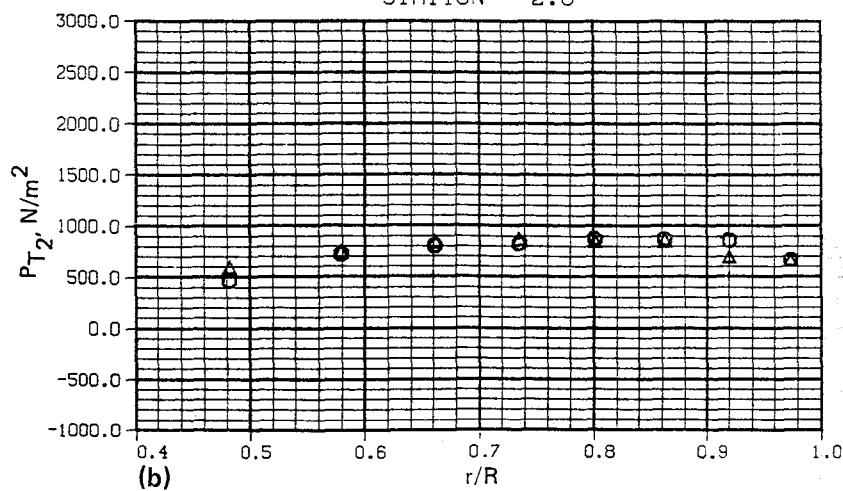
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 338, MASS FLOW: 71.30 slugs/sec

RPM: 718. STATION = 1.0



STATION = 2.0



STATION = 3.0

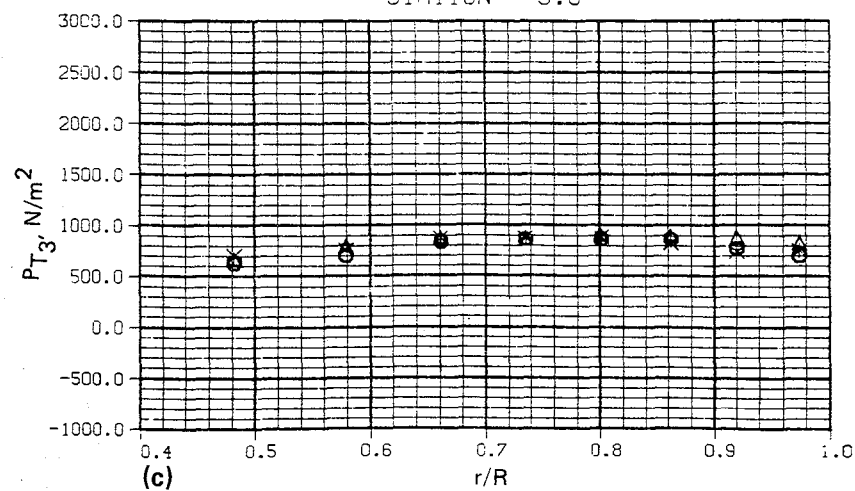


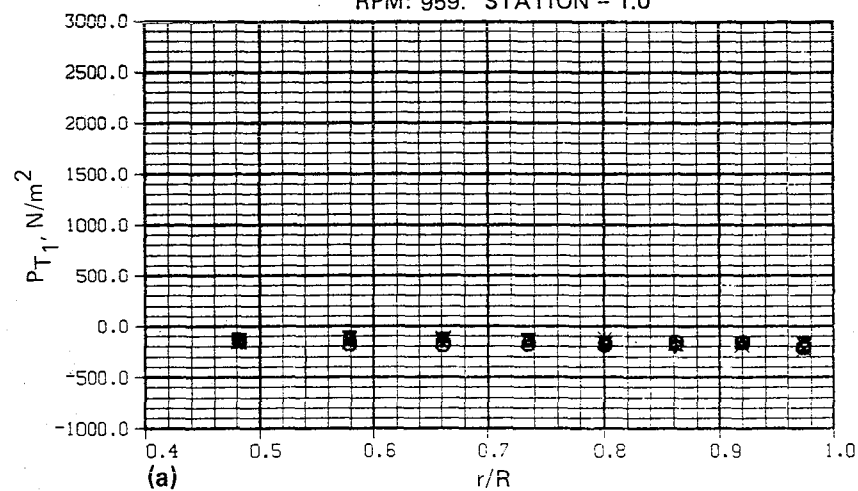
Figure D214.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

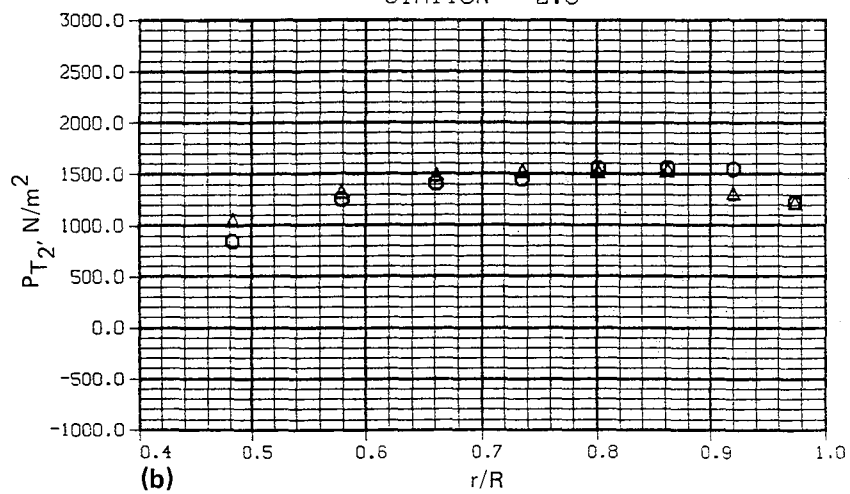
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 339. MASS FLOW: 95.91 slugs/sec

RPM: 959. STATION = 1.0



STATION = 2.0



STATION = 3.0

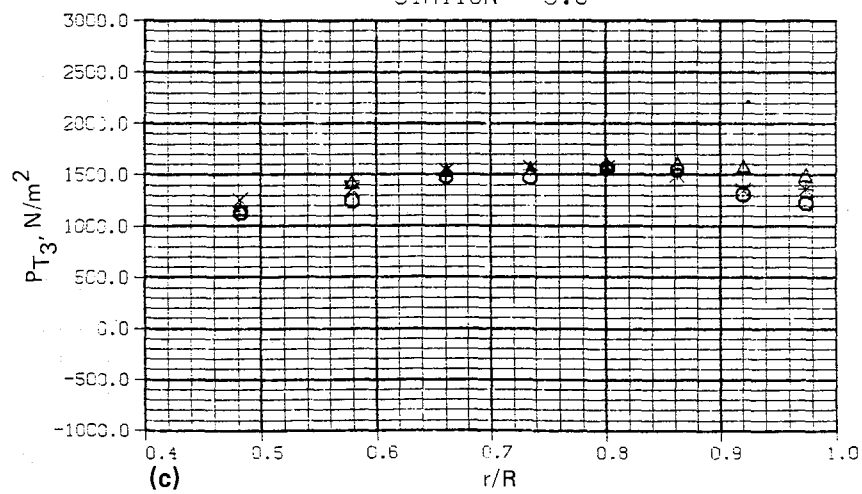


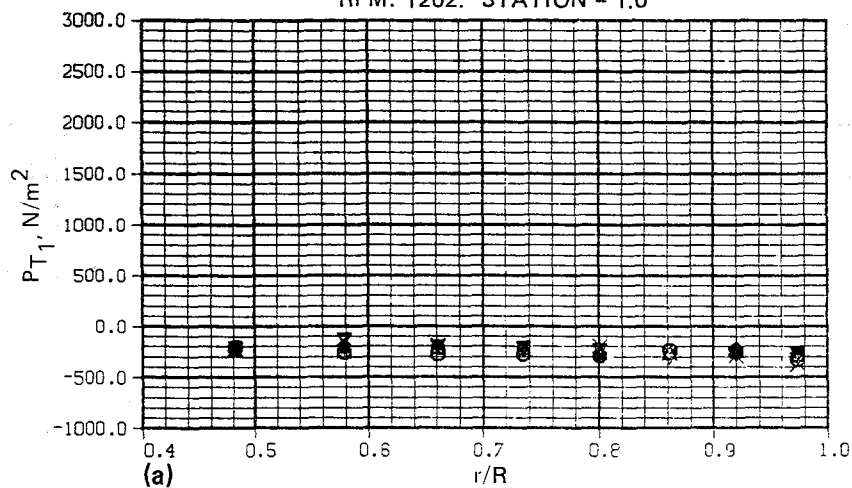
Figure D215.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

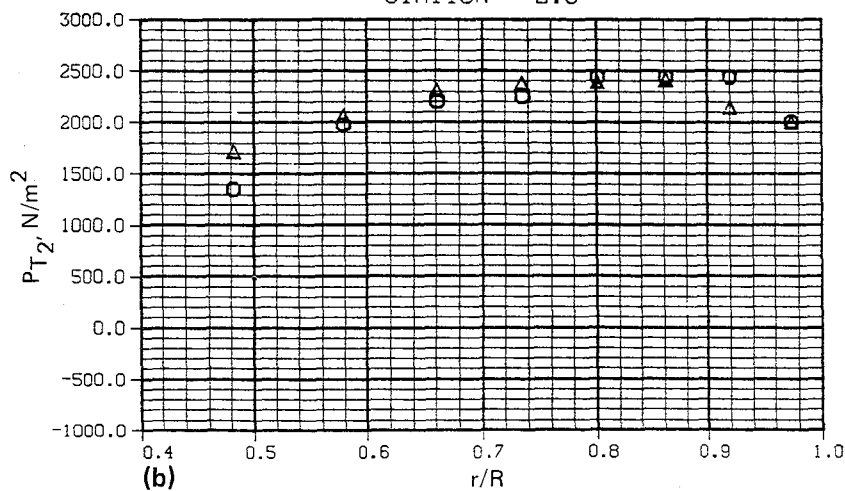
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 340. MASS FLOW: 121.12 slugs/sec

RPM: 1202. STATION = 1.0



STATION = 2.0



STATION = 3.0

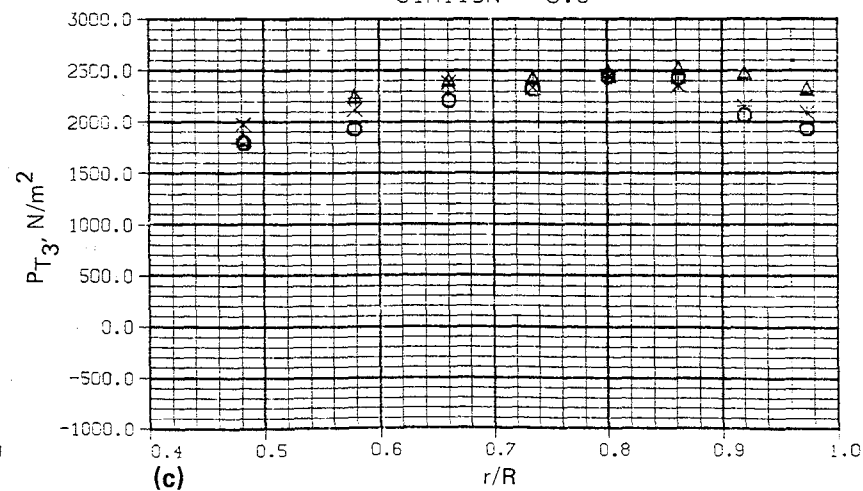


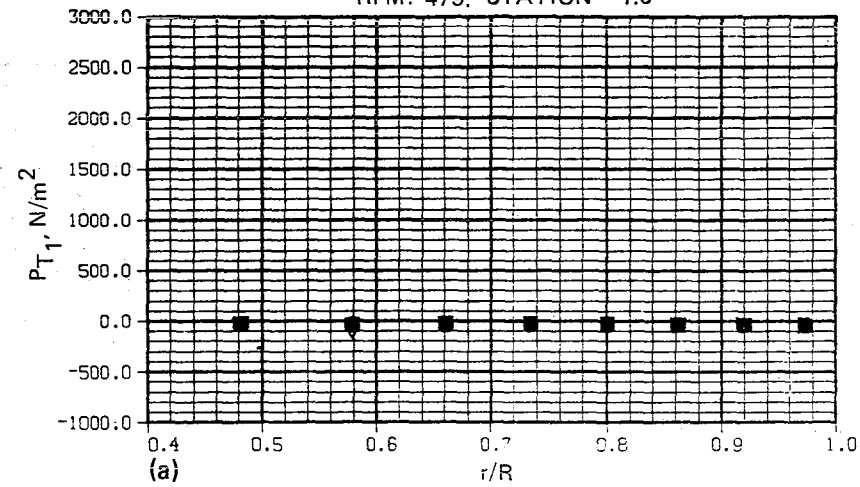
Figure D216.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

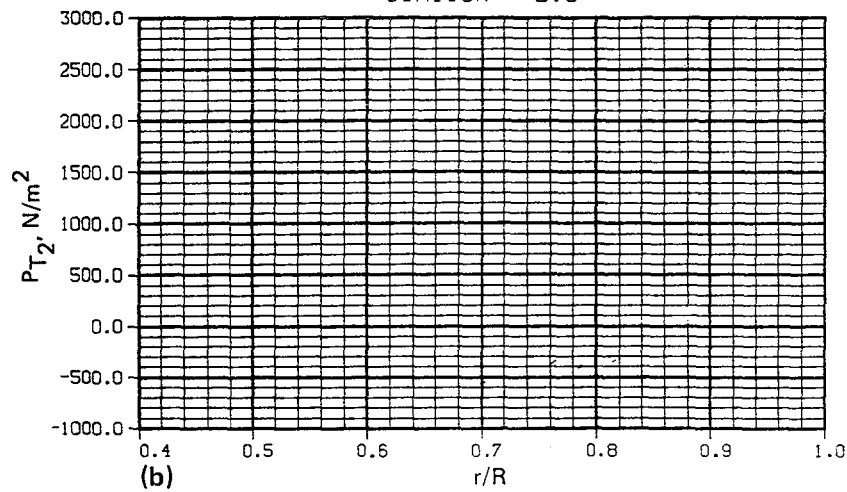
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 341. MASS FLOW: 41.75 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

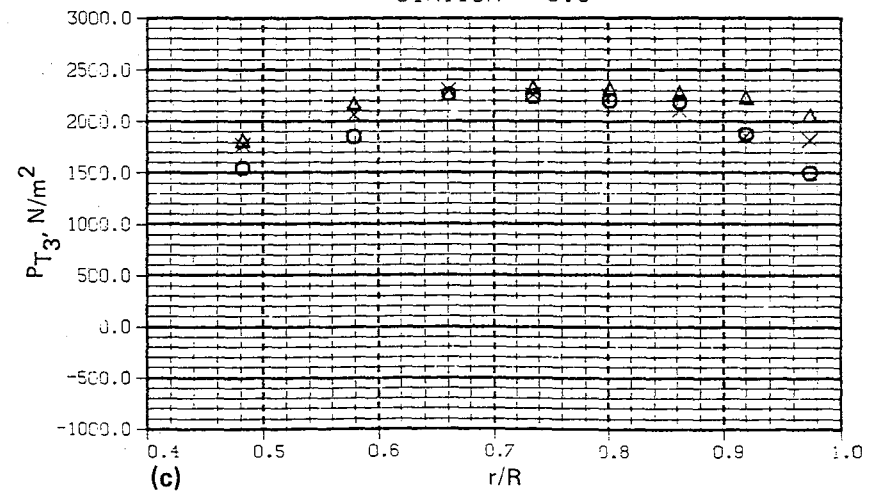


Figure D217.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 342. MASS FLOW: 64.09 slugs/sec

RPM: 722. STATION = 1.0

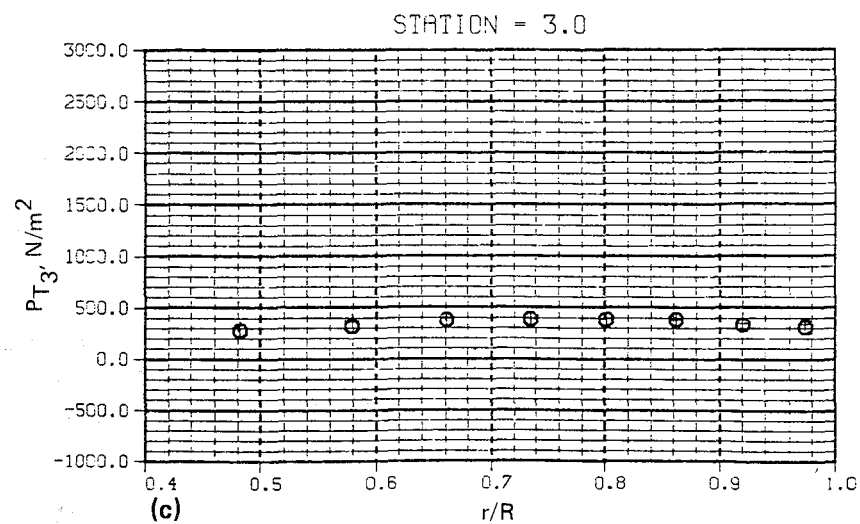
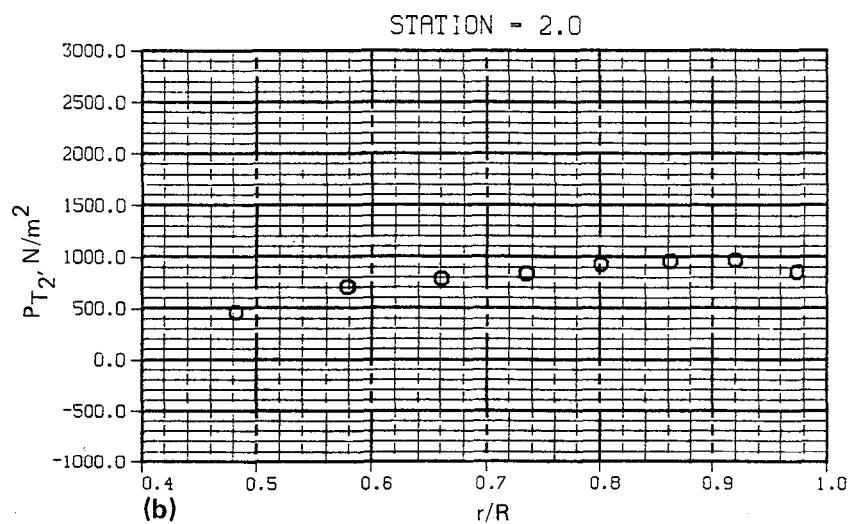
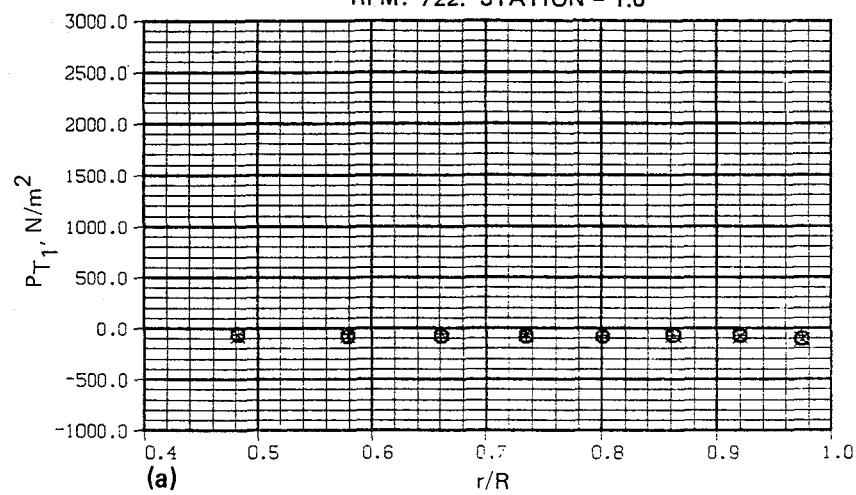


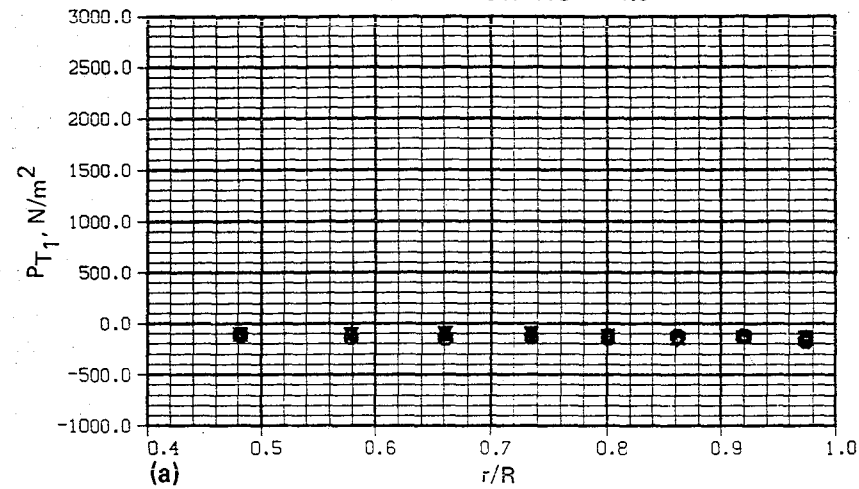
Figure D218.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

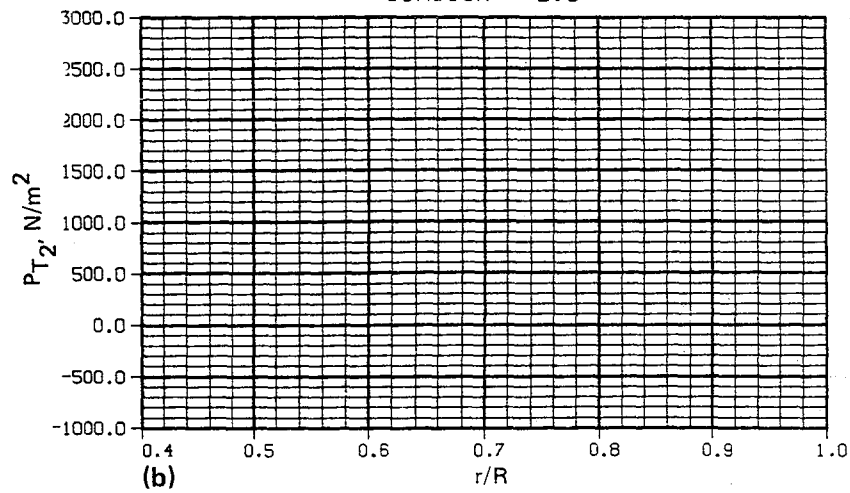
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 343. MASS FLOW: 85.96 slugs/sec

RPM: 961. STATION = 1.0



STATION = 2.0



STATION = 3.0

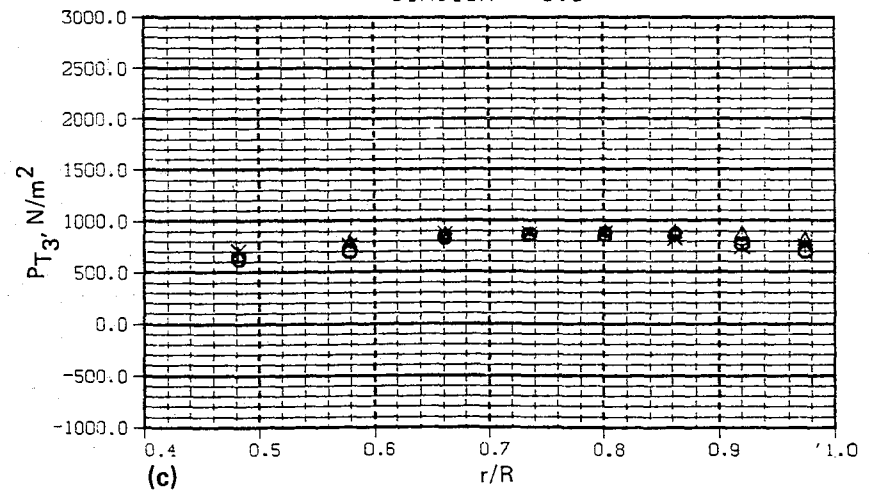


Figure D219.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 344. MASS FLOW: 108.86 slugs/sec

RPM: 1202. STATION = 1.0

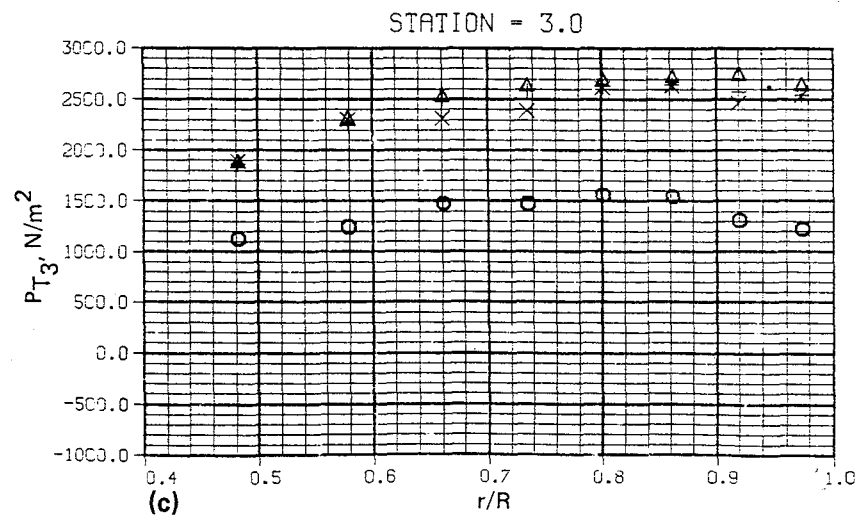
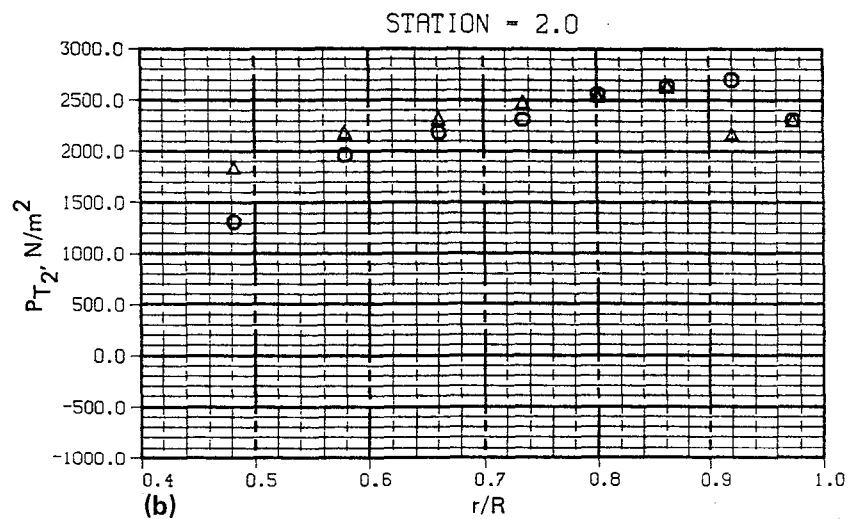
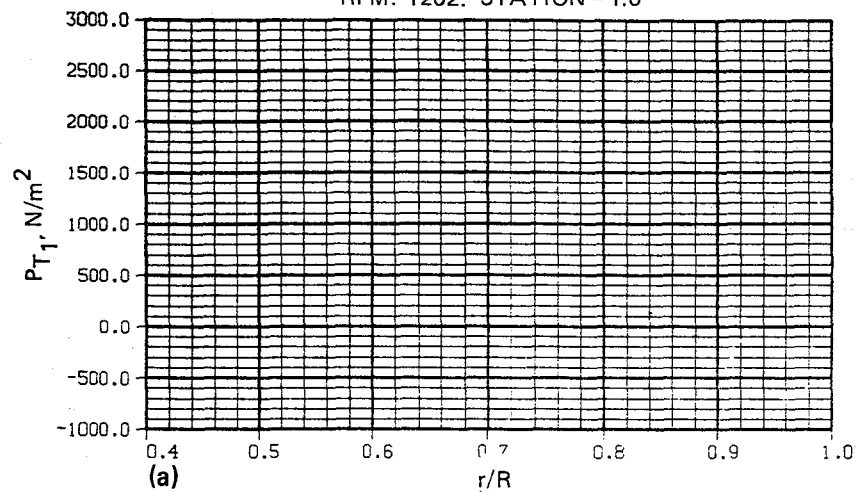


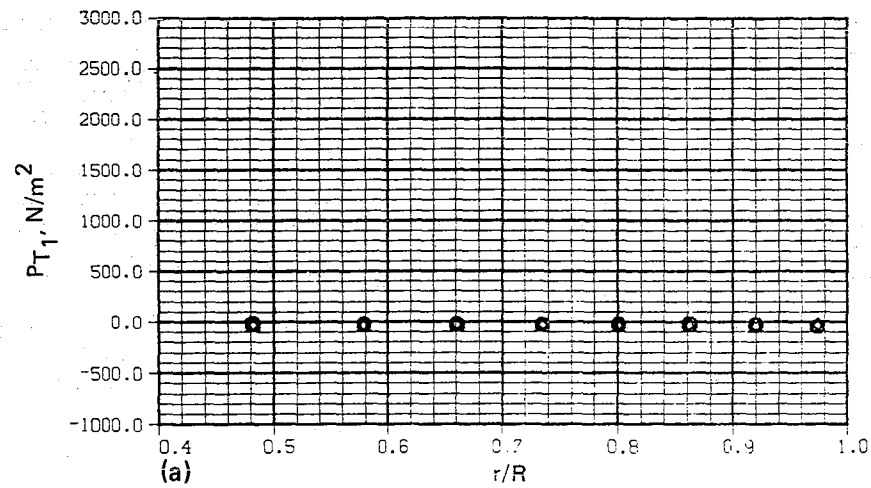
Figure D220.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

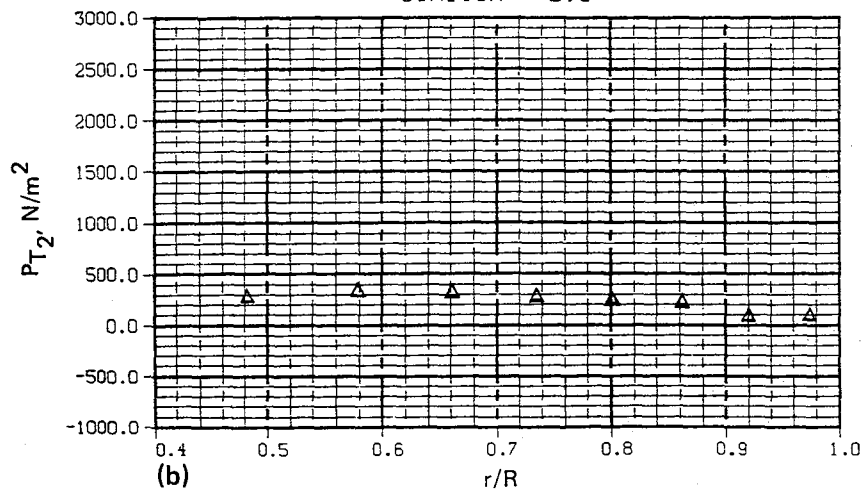
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 345. MASS FLOW: 31.15 slugs/sec

RPM: 479. STATION = 1.0



STATION - 2.0



STATION - 3.0

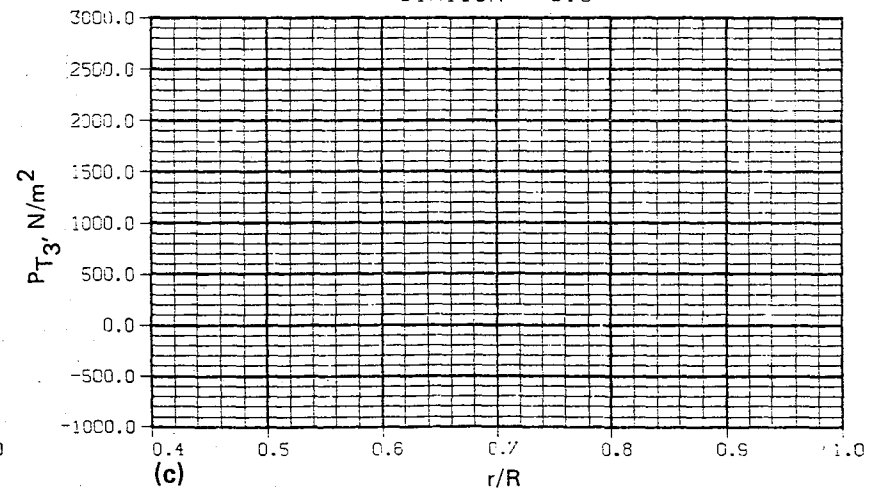


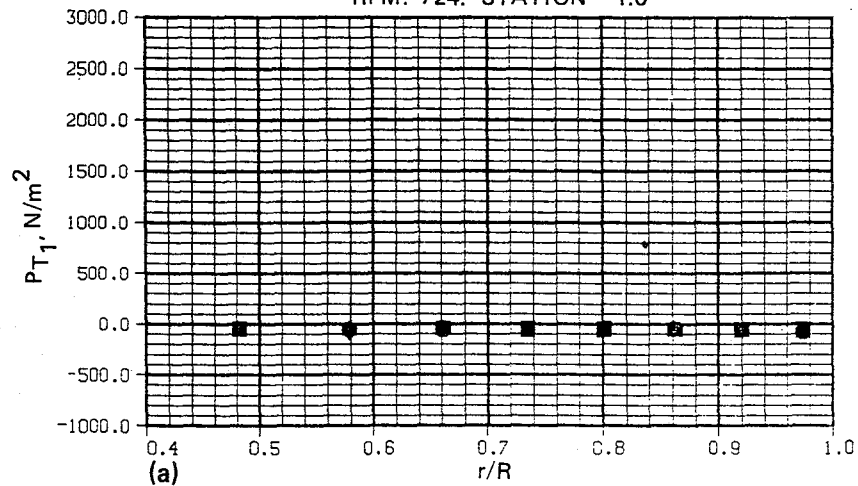
Figure D221.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

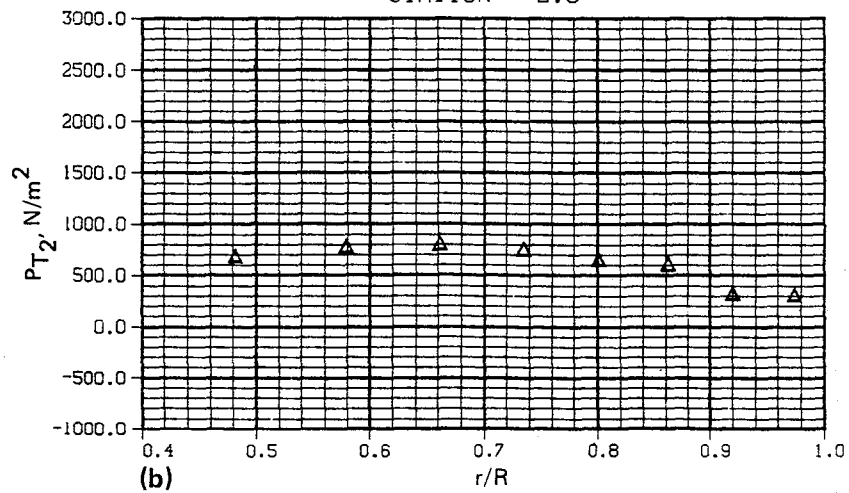
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 346. MASS FLOW: 49.64 slugs/sec

RPM: 724. STATION = 1.0



STATION = 2.0



STATION = 3.0

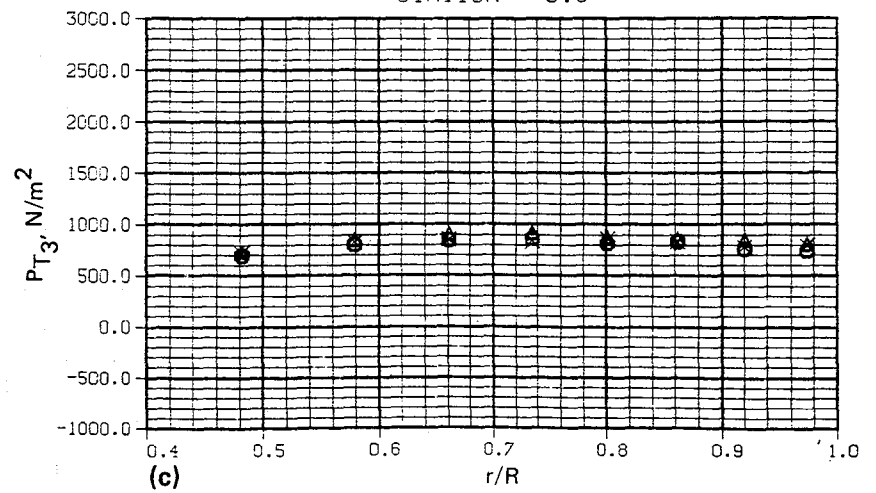


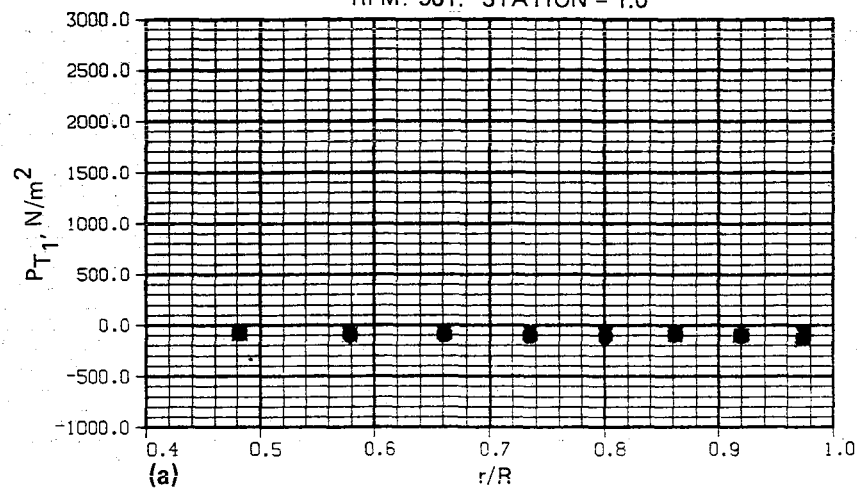
Figure D222.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

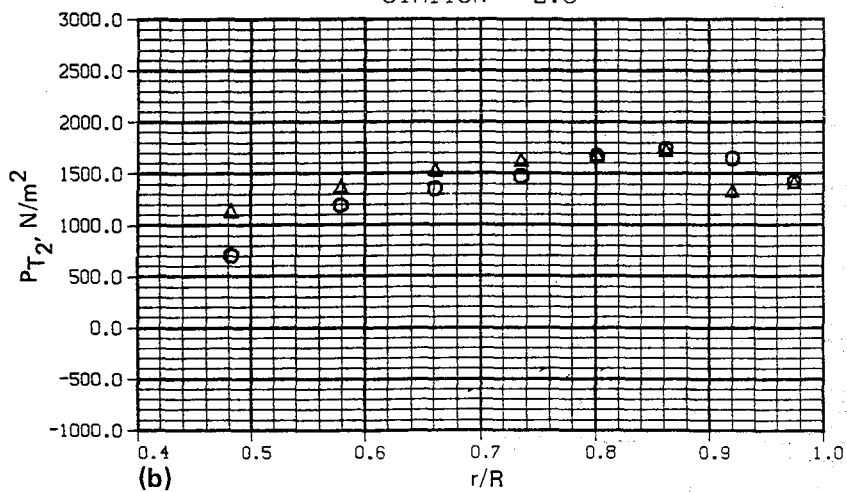
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 347. MASS FLOW: 73.08 slugs/sec

RPM: 961. STATION = 1.0



STATION = 2.0



STATION = 3.0

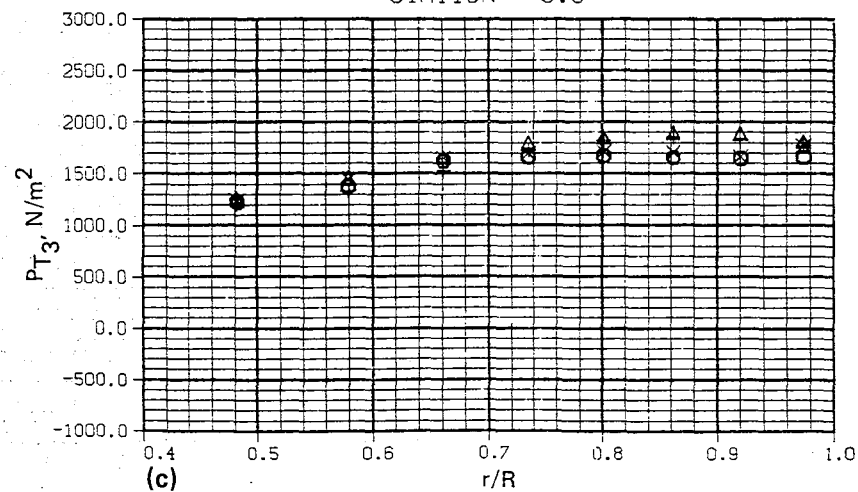


Figure D223.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 348. MASS FLOW: 93.27 slugs/sec

RPM: 1203. STATION = 1.0

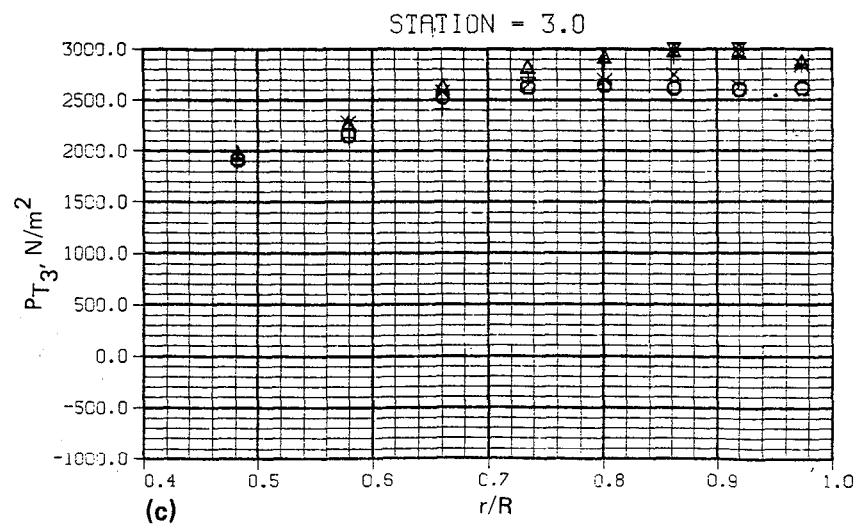
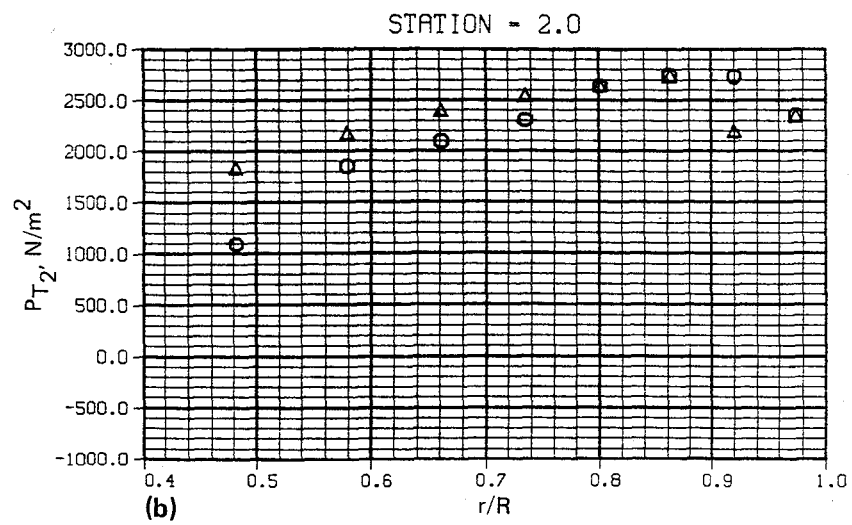
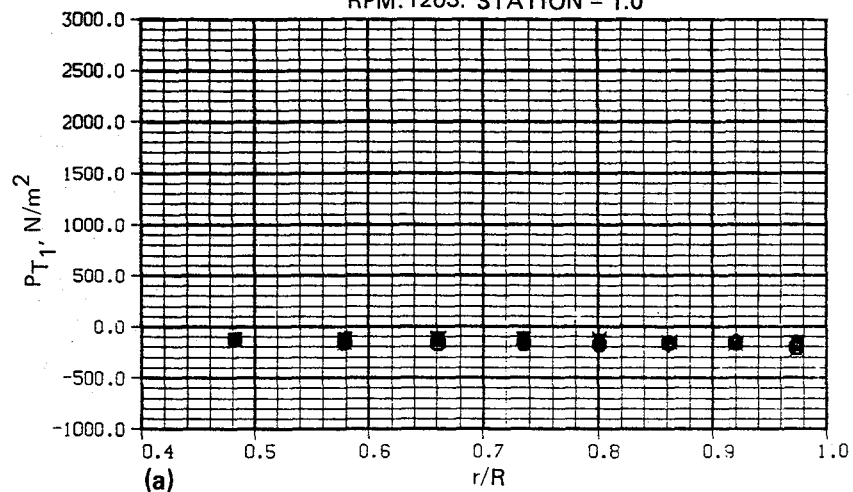


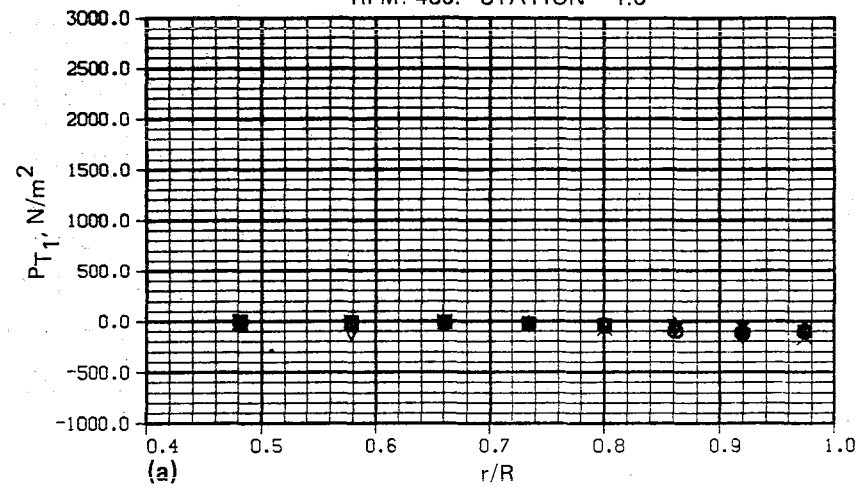
Figure D224.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

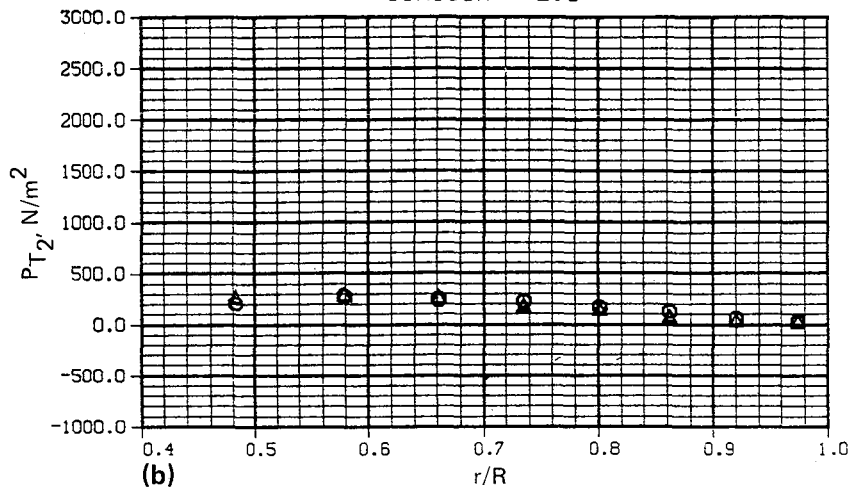
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 349. MASS FLOW: 19.58 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

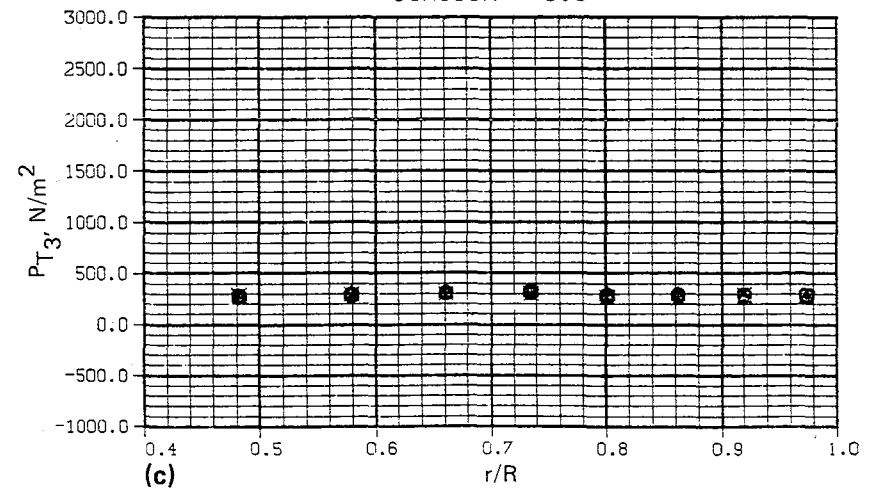


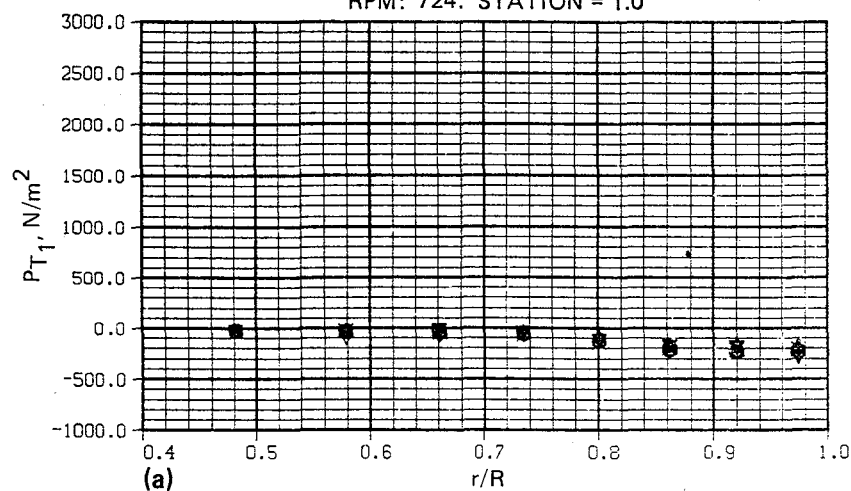
Figure D225.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

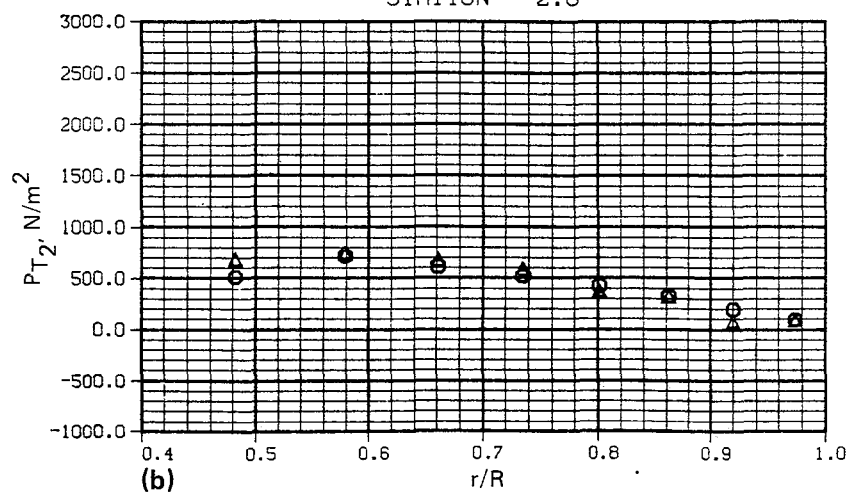
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 350. MASS FLOW: 30.01 slugs/sec

RPM: 724. STATION = 1.0



STATION - 2.0



STATION - 3.0

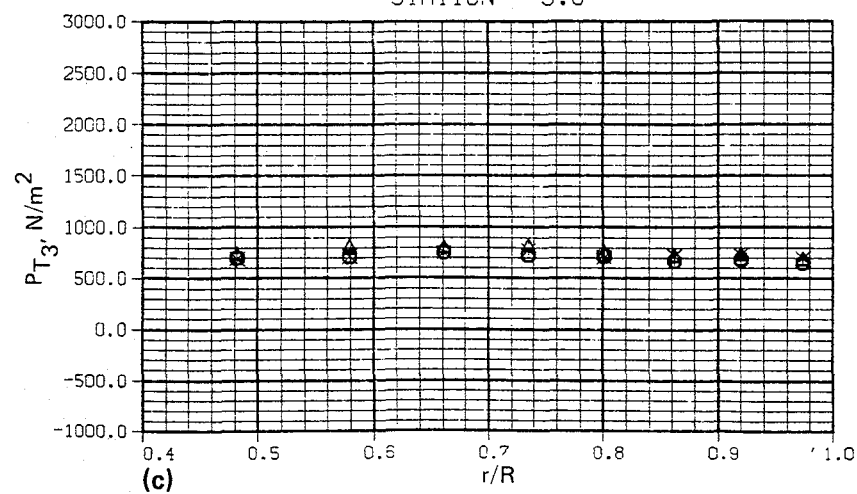


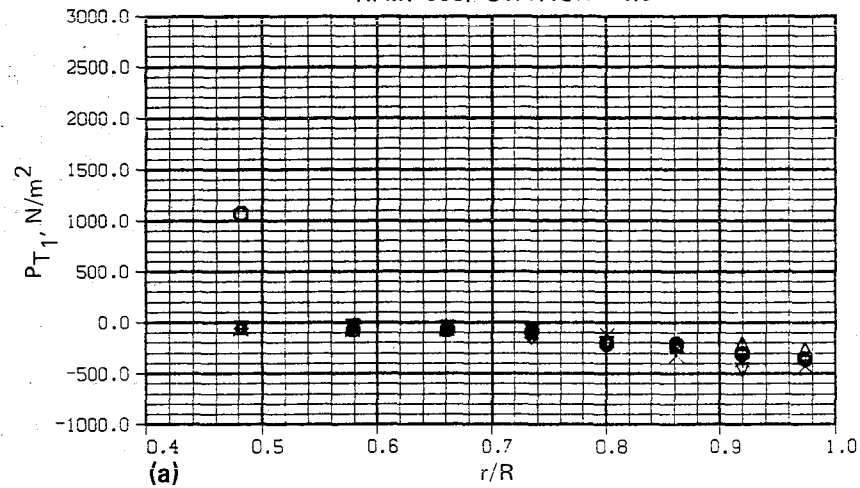
Figure D226.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

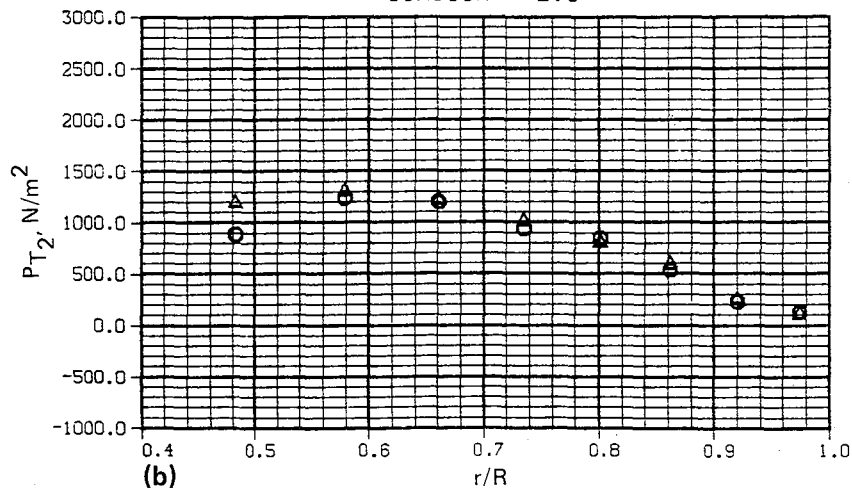
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 351. MASS FLOW: 50.00 slugs/sec

RPM: 958. STATION = 1.0



STATION = 2.0



STATION = 3.0

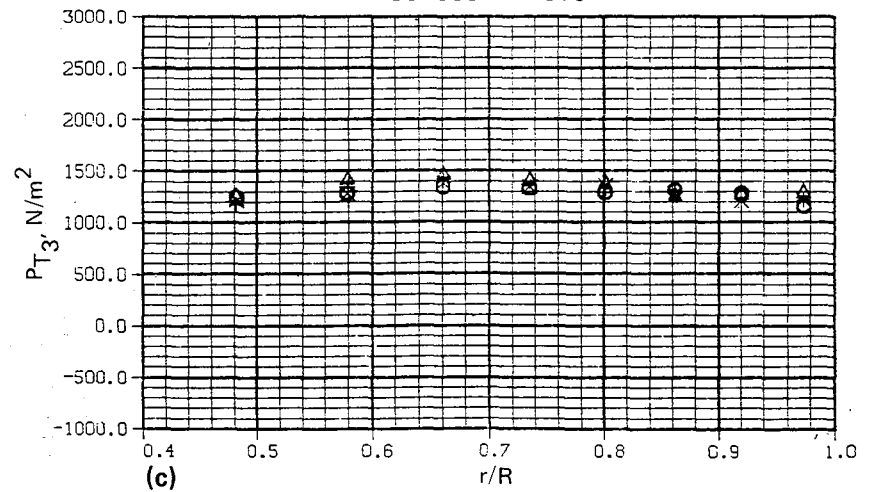


Figure D227.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 352. MASS FLOW: 61.86 slugs/sec

RPM: 1204. STATION = 1.0

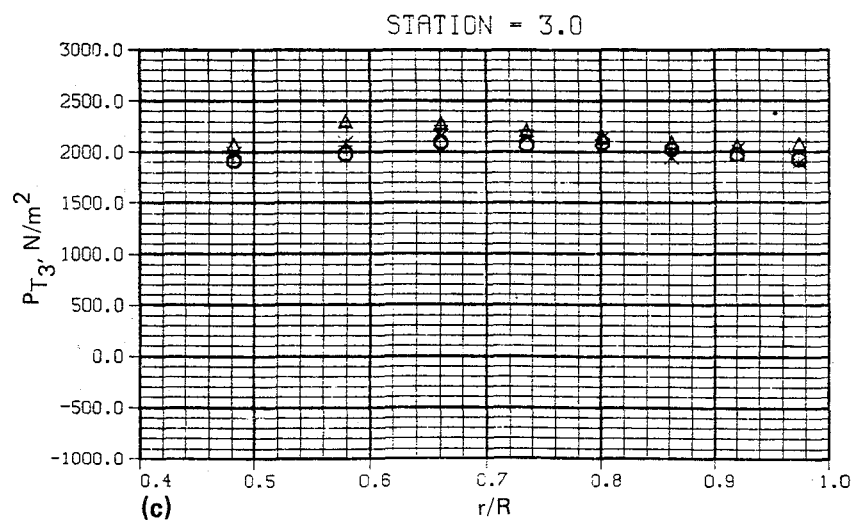
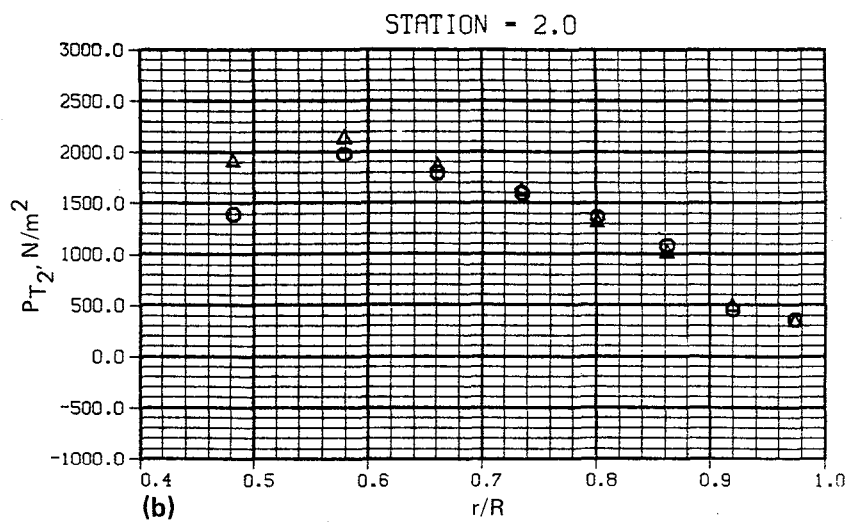
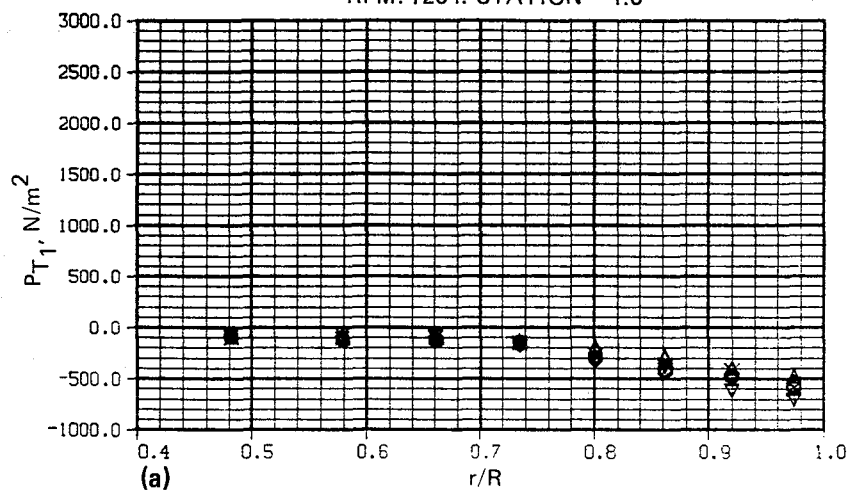


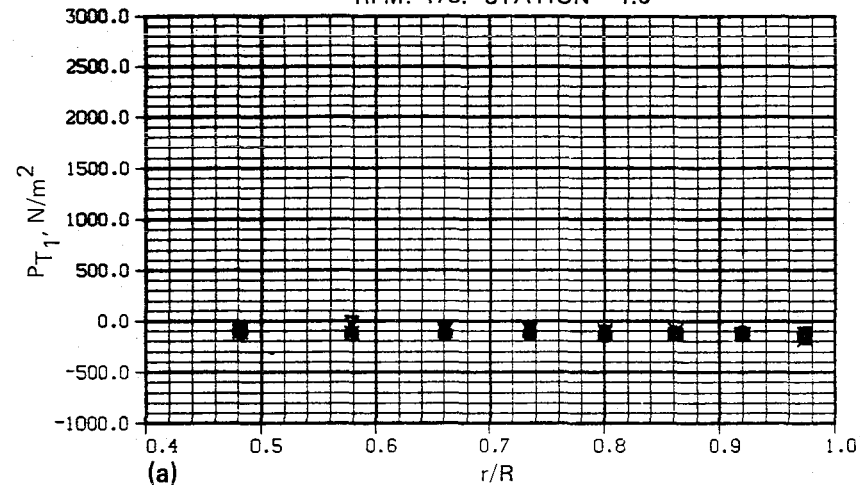
Figure D228.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

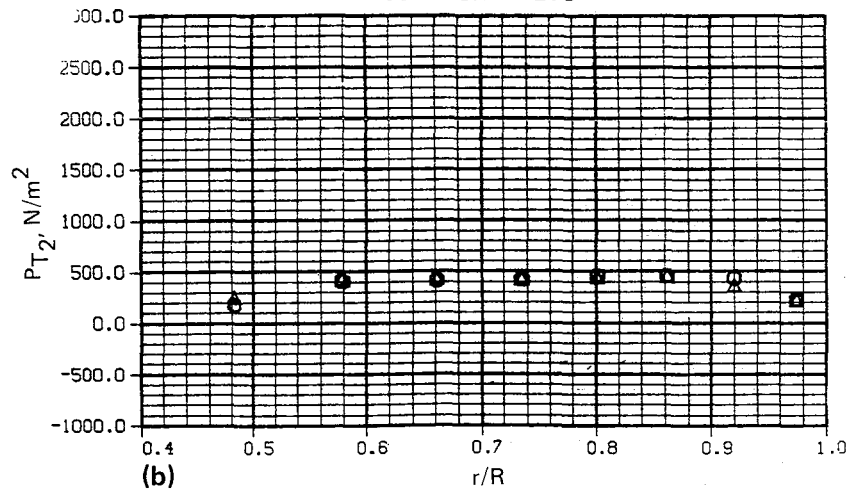
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 357. MASS FLOW: 80.90 slugs/sec

RPM: 478. STATION = 1.0



STATION - 2.0



STATION - 3.0

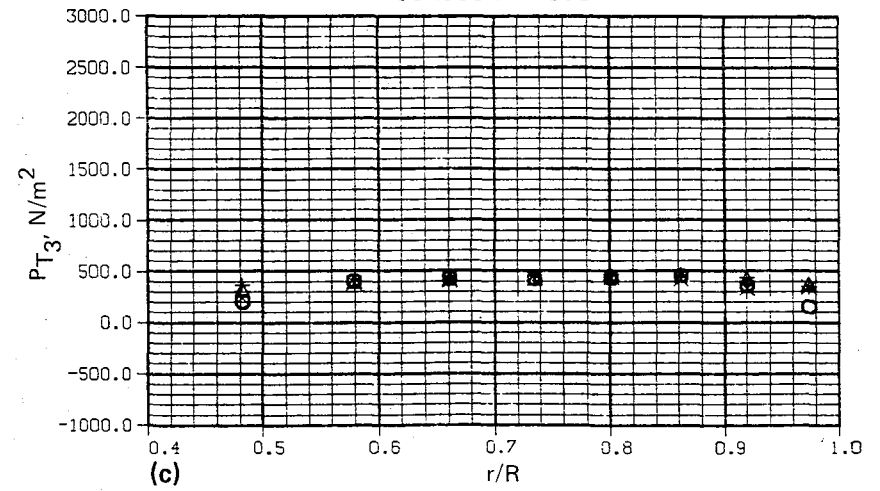


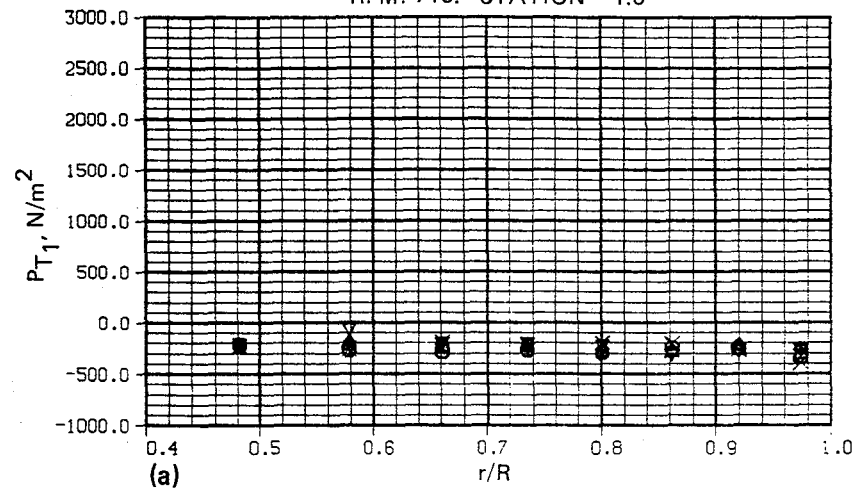
Figure D229.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

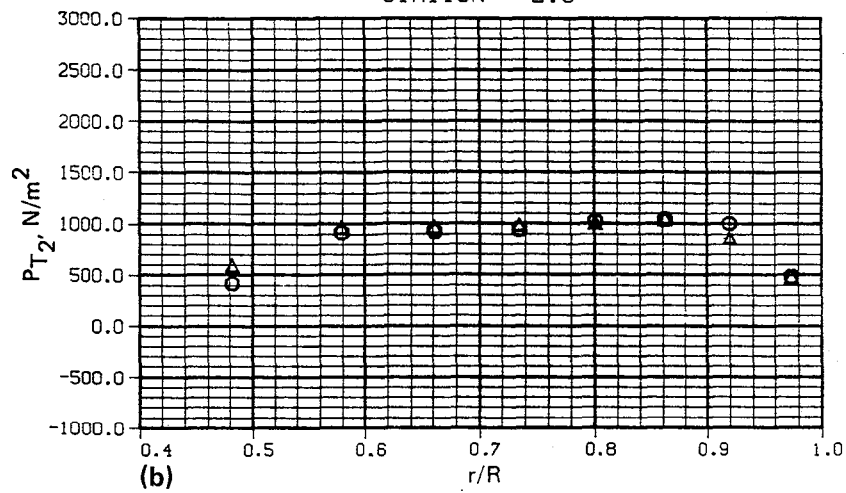
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 358. MASS FLOW: 122.59 slugs/sec

RPM: 719. STATION = 1.0



STATION - 2.0



STATION - 3.0

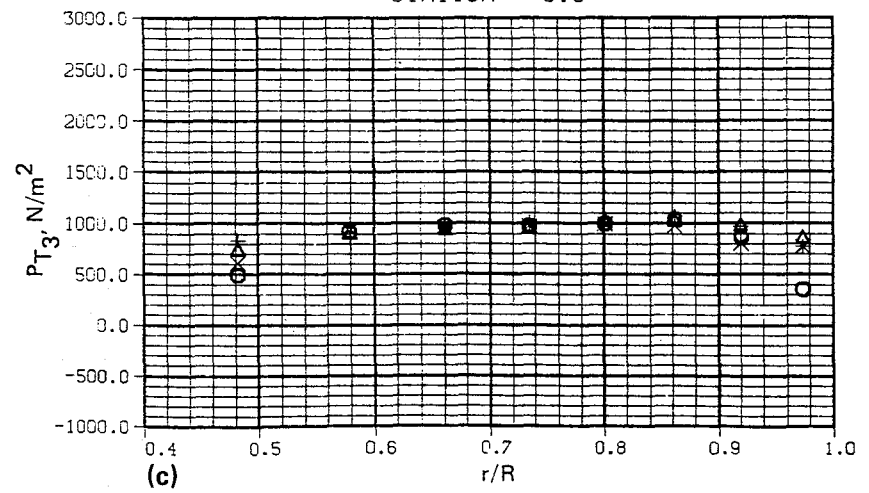


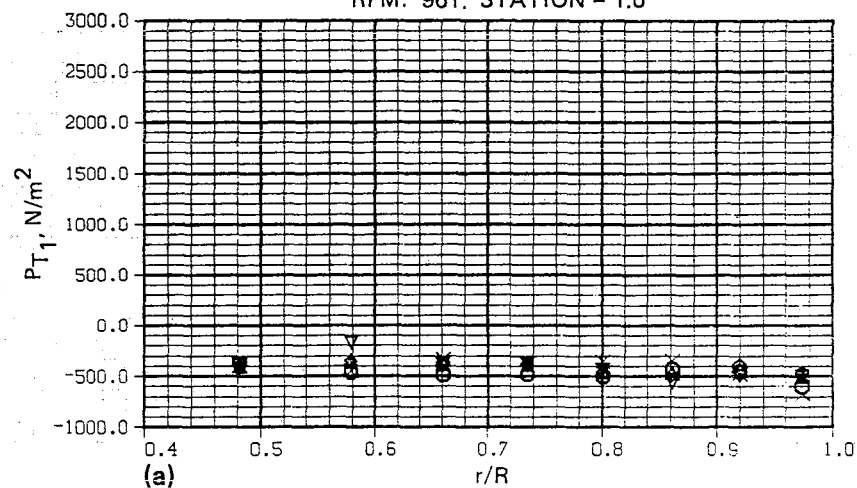
Figure D230.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

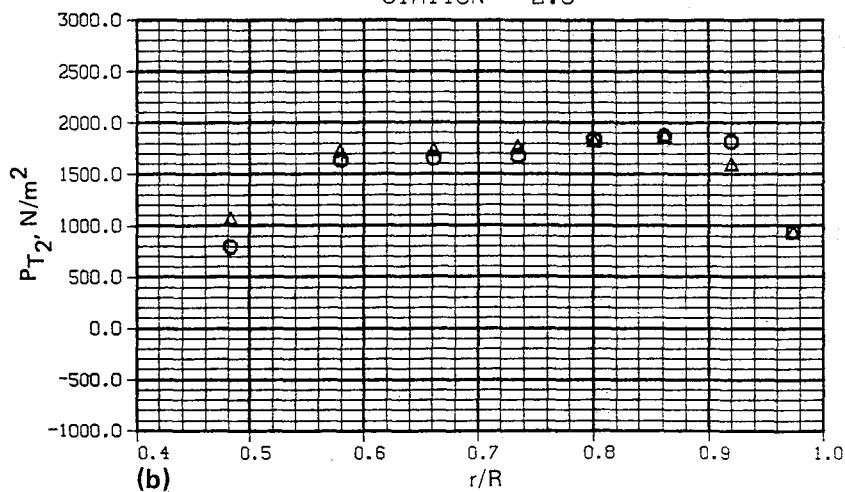
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 359. MASS FLOW: 165.25 slugs/sec

RPM: 961. STATION = 1.0



STATION = 2.0



STATION = 3.0

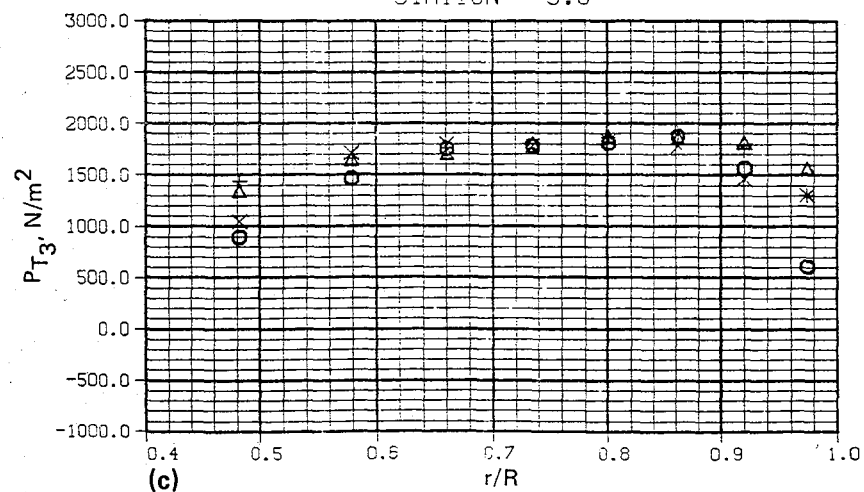


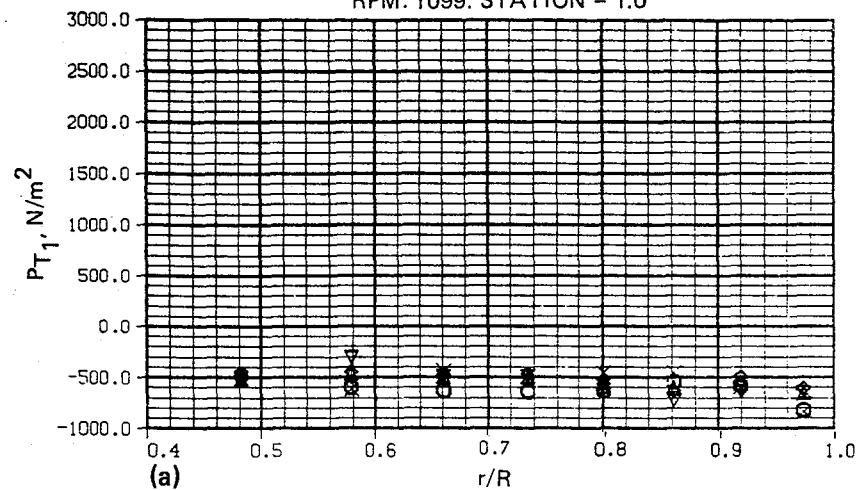
Figure D231.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

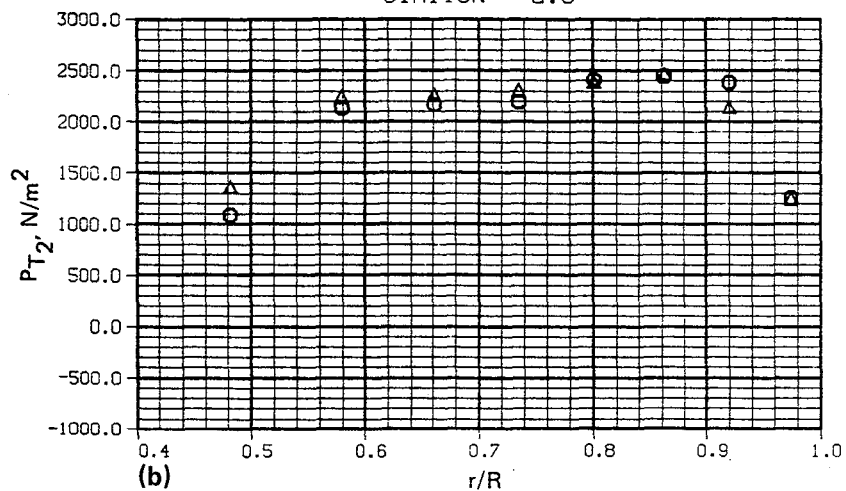
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 360. MASS FLOW: 189.49 slugs/sec

RPM: 1099. STATION = 1.0



STATION = 2.0



STATION = 3.0

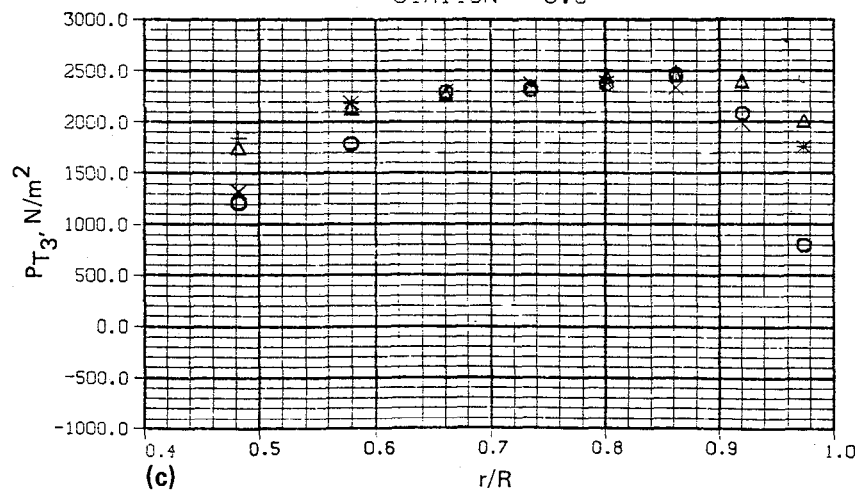


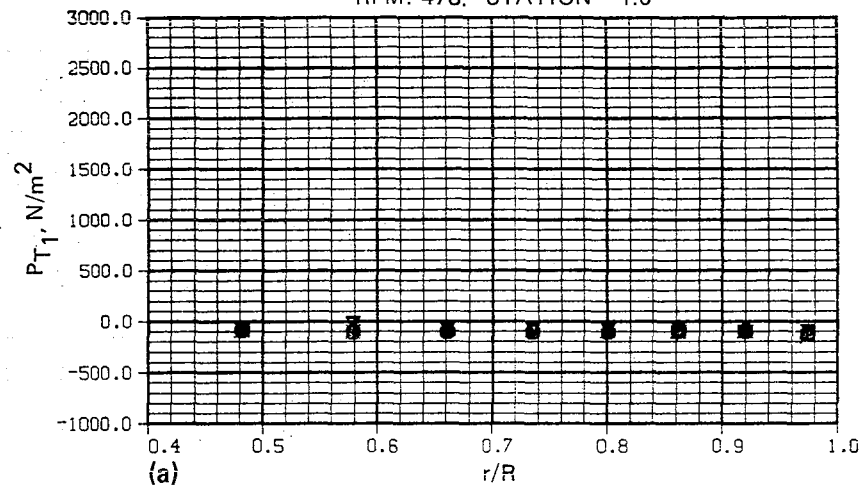
Figure D232.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

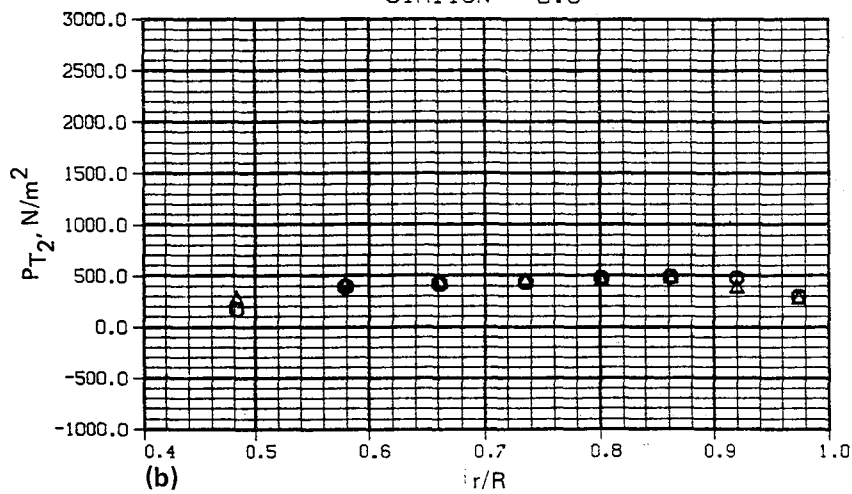
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 361. MASS FLOW: 71.73 slugs/sec

RPM: 478. STATION = 1.0



STATION - 2.0



STATION - 3.0

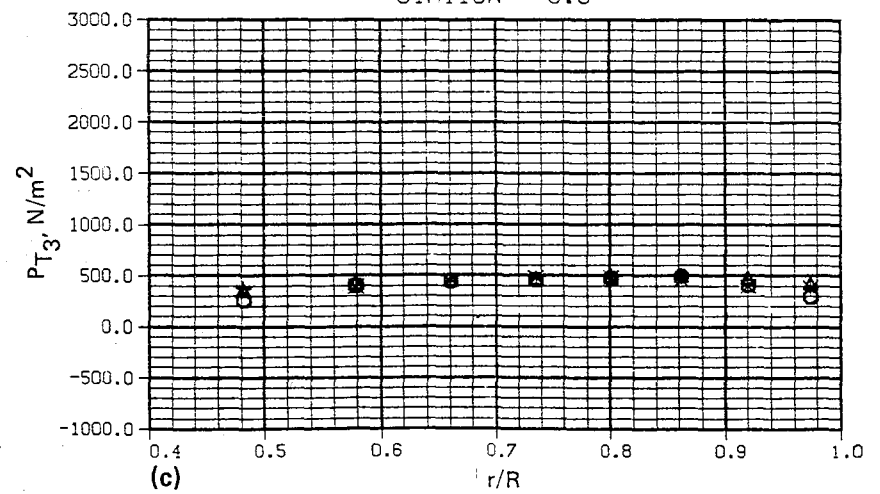


Figure D233.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 362. MASS FLOW: 110.61 slugs/sec

RPM: 725. STATION = 1.0

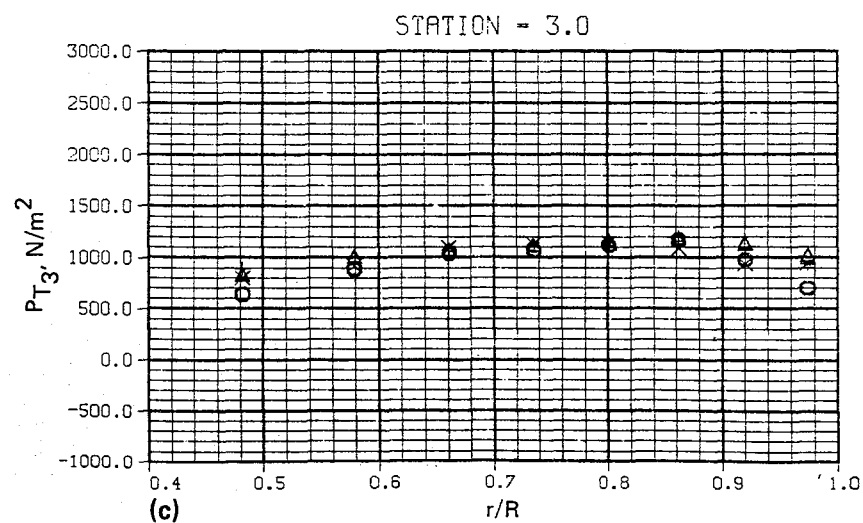
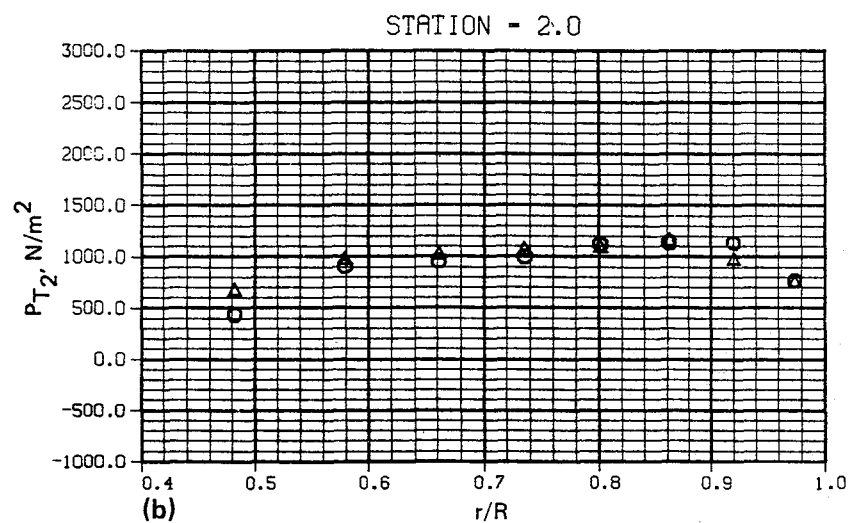
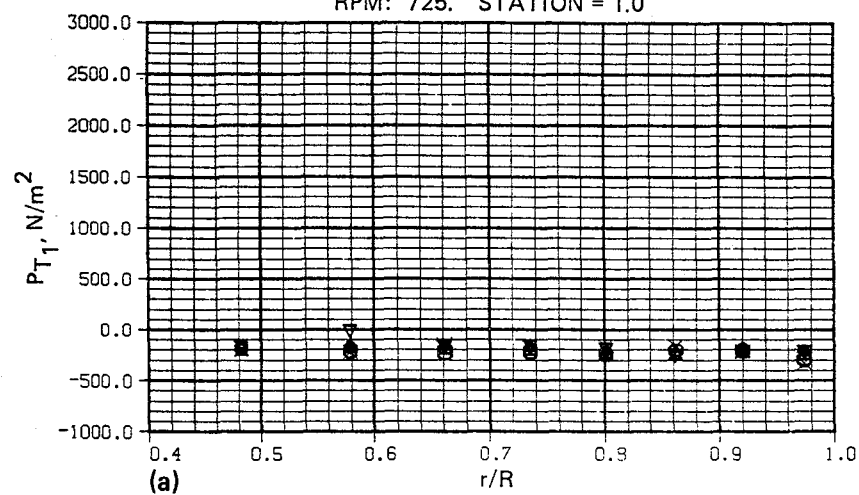


Figure D234.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 363. MASS FLOW: 147.72 slugs/sec

RPM: 960. STATION = 1.0

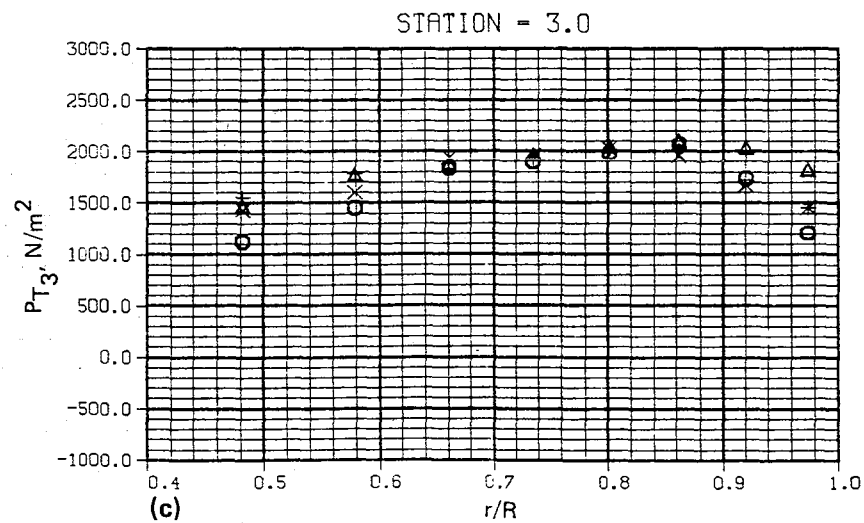
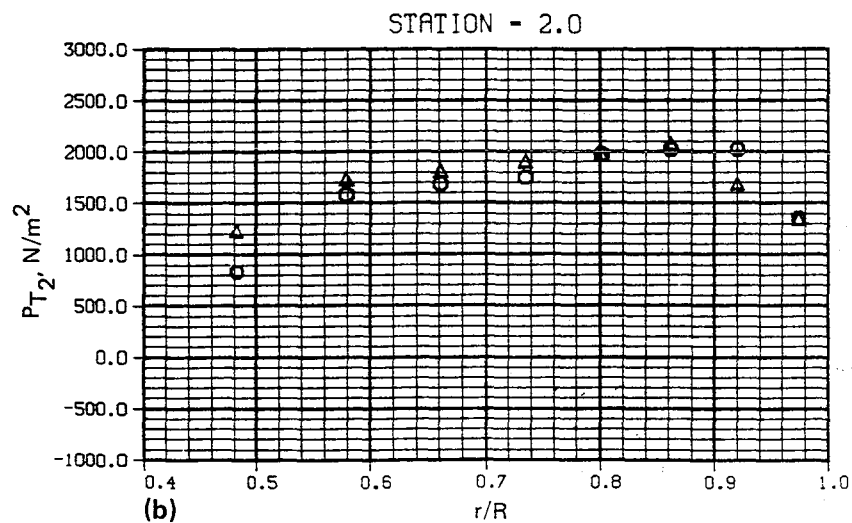
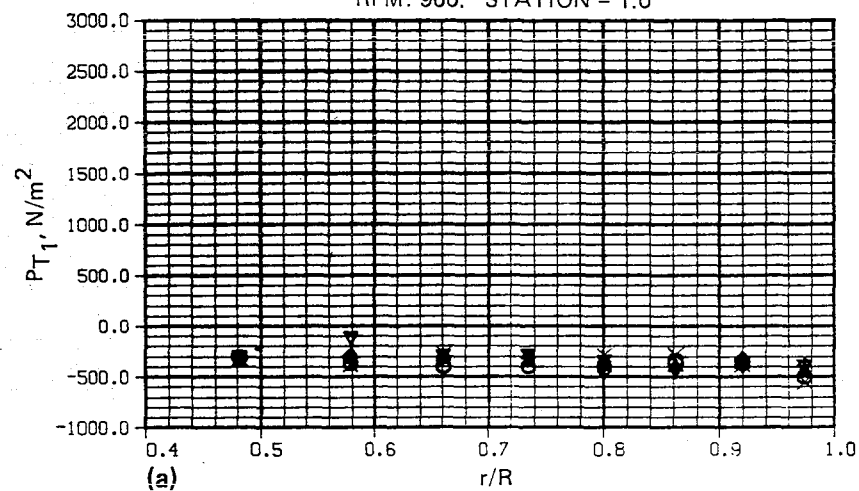


Figure D235.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 364. MASS FLOW: 169.84 slugs/sec

RPM: 1099. STATION = 1.0

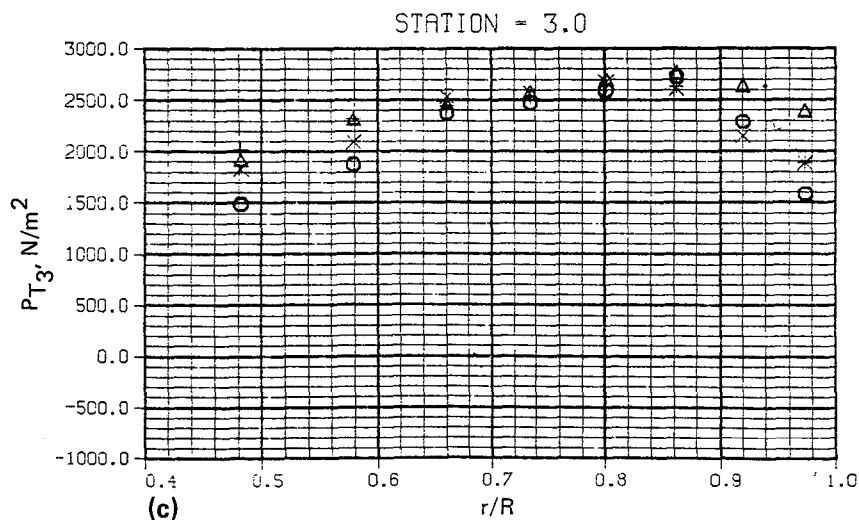
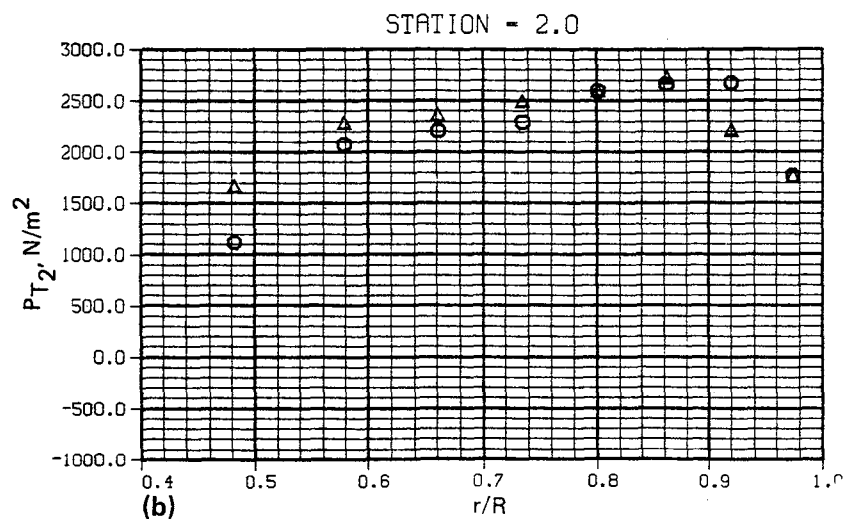
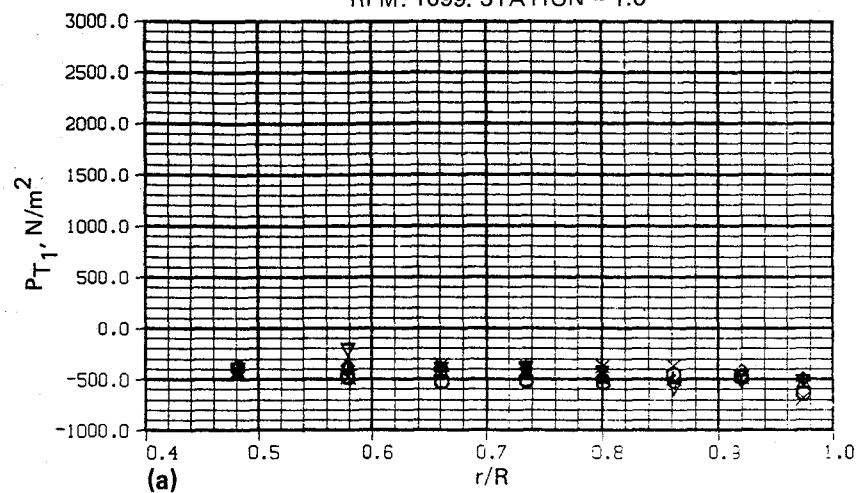


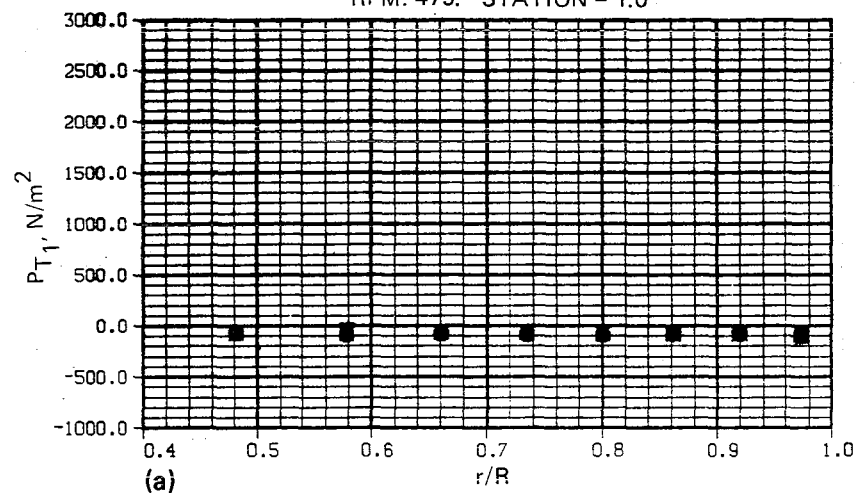
Figure D236.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

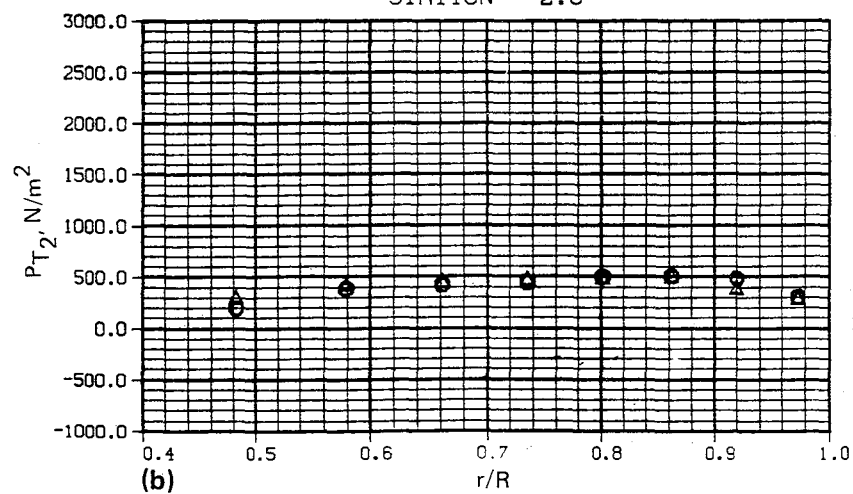
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 365. MASS FLOW: 65.27 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

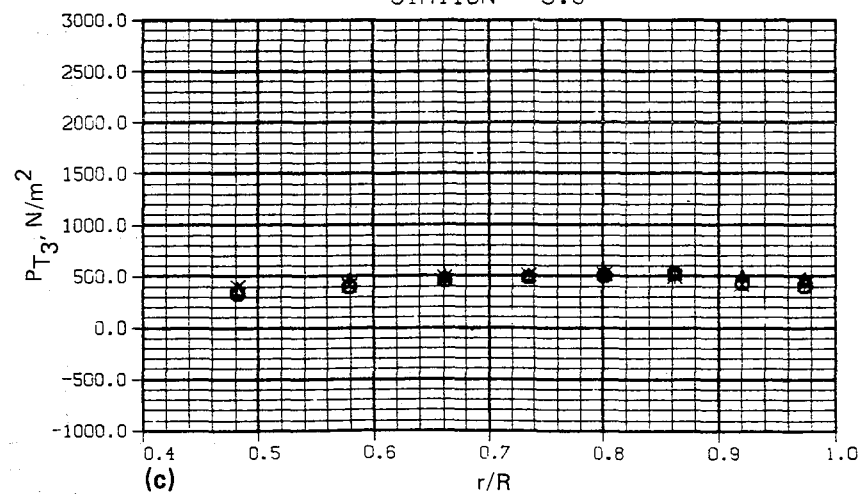


Figure D237.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 34.0

RUN NO: 366. MASS FLOW: 100.19 slugs/sec

RPM: 724. STATION = 1.0

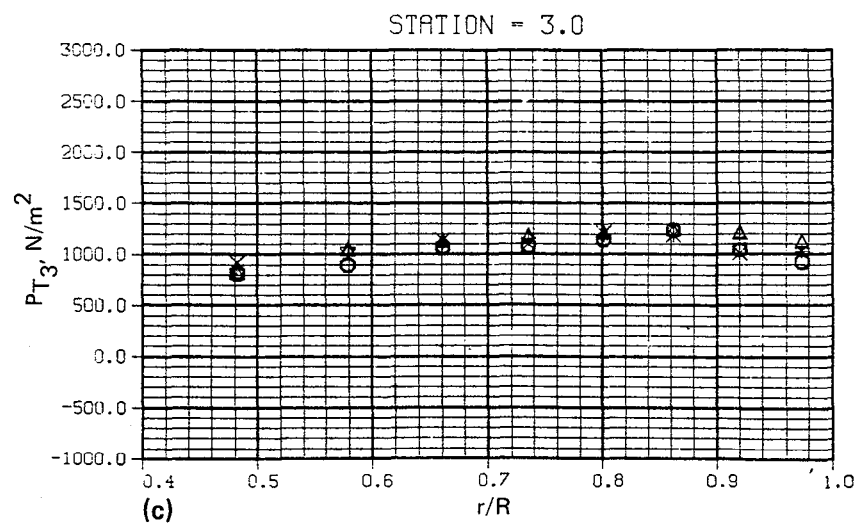
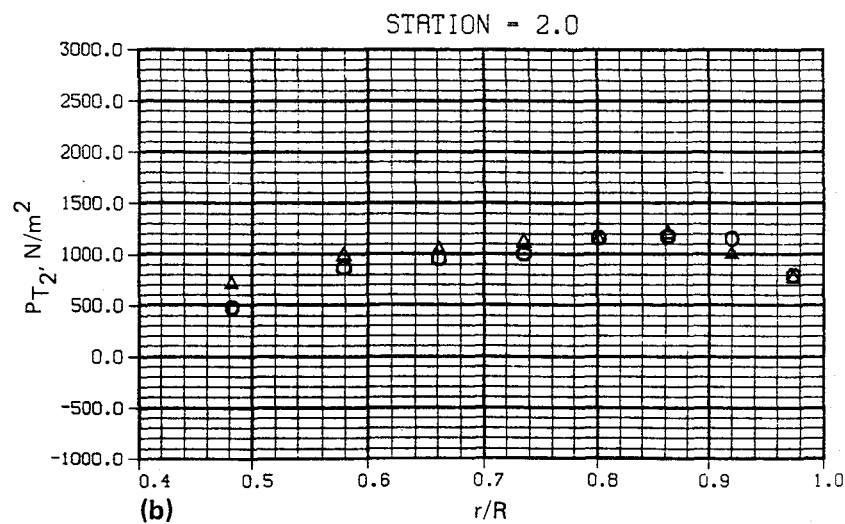
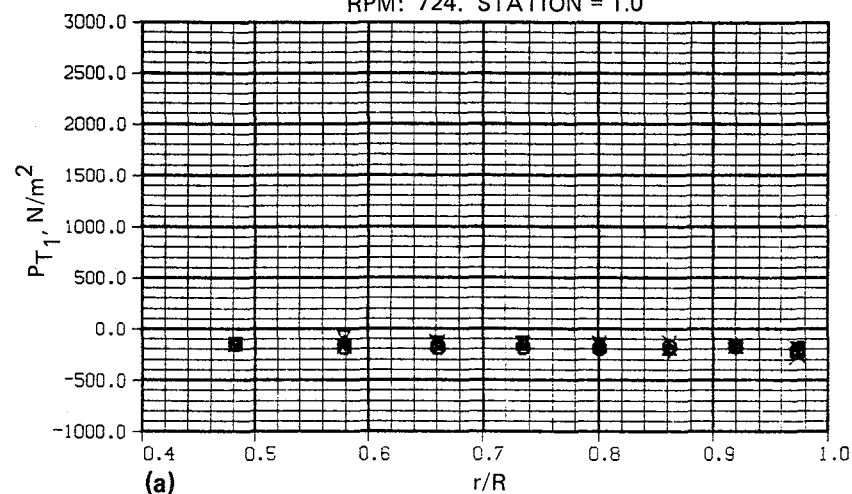


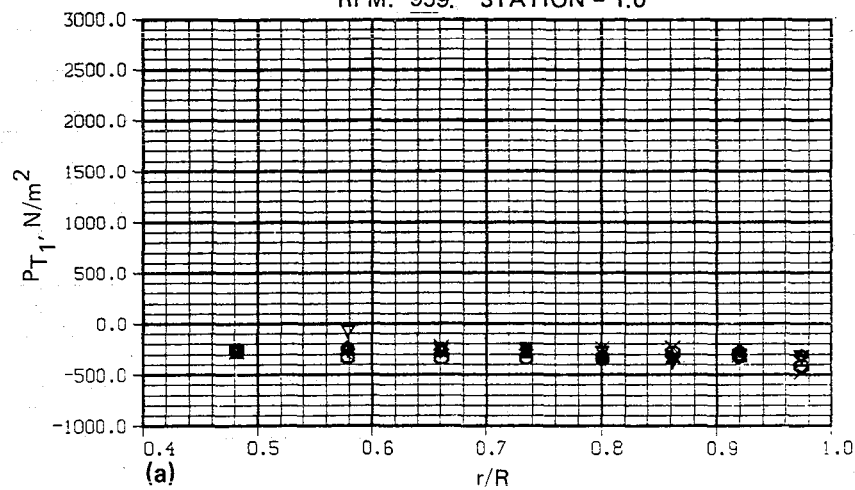
Figure D238.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

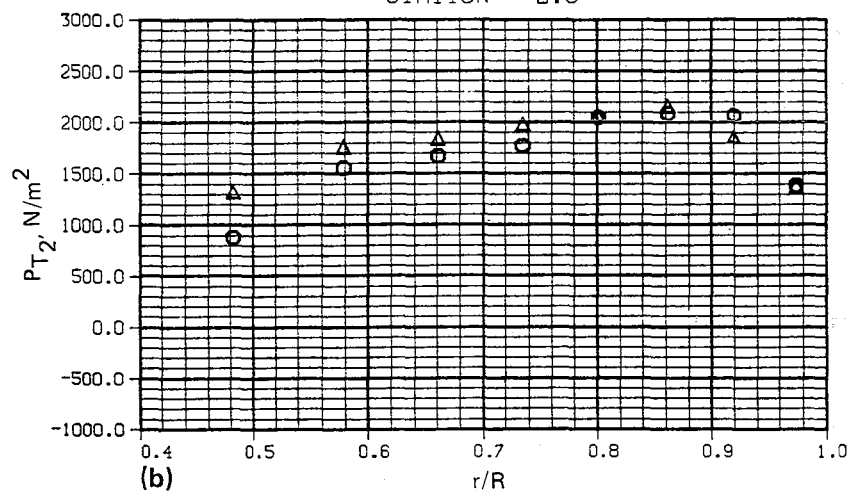
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 367. MASS FLOW: 133.84 slugs/sec

RPM: 959. STATION = 1.0



STATION = 2.0



STATION = 3.0

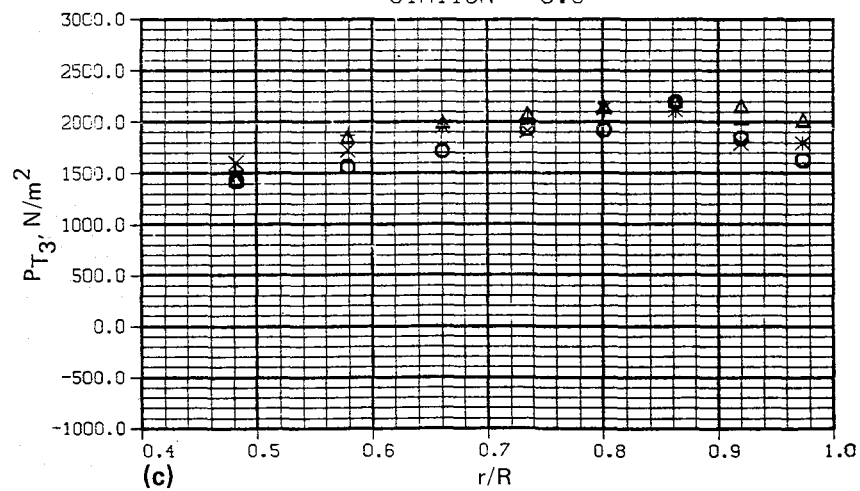


Figure D239.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 368. MASS FLOW: 155.10 slugs/sec

RPM: 1101. STATION = 1.0

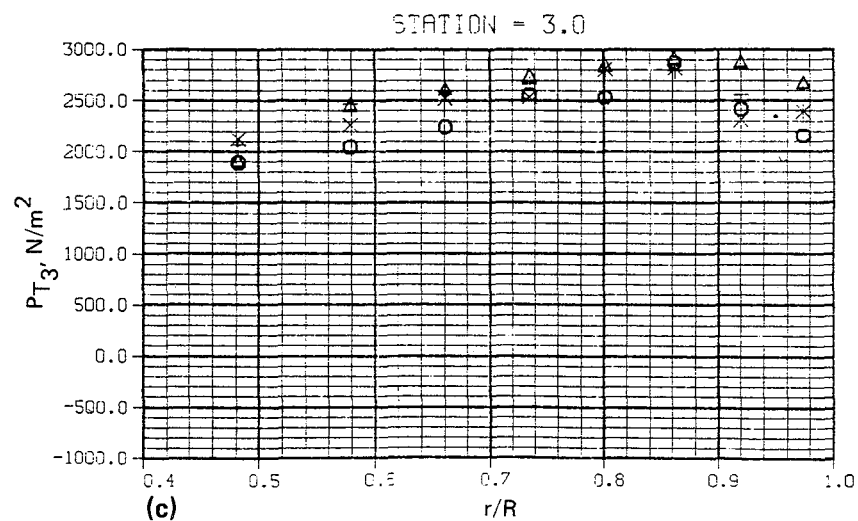
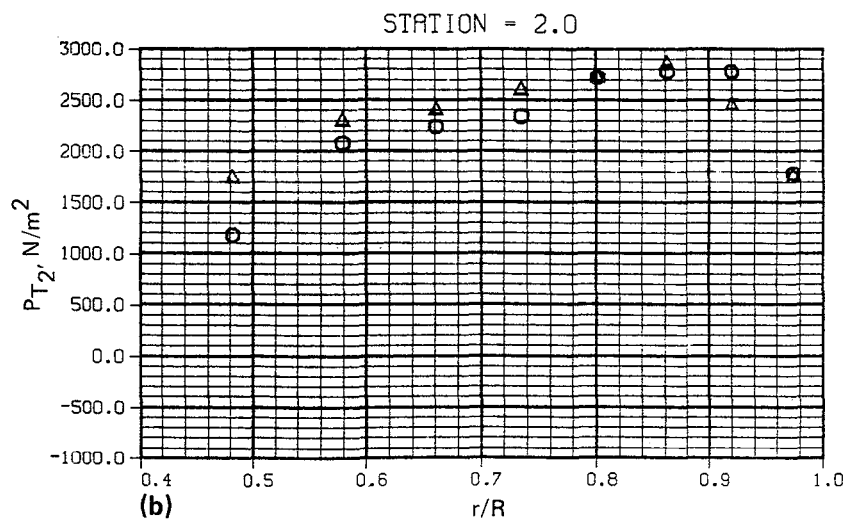
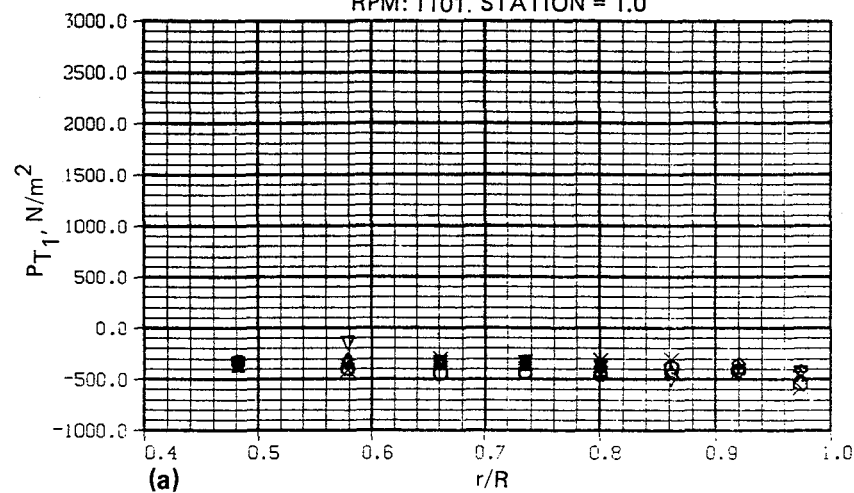


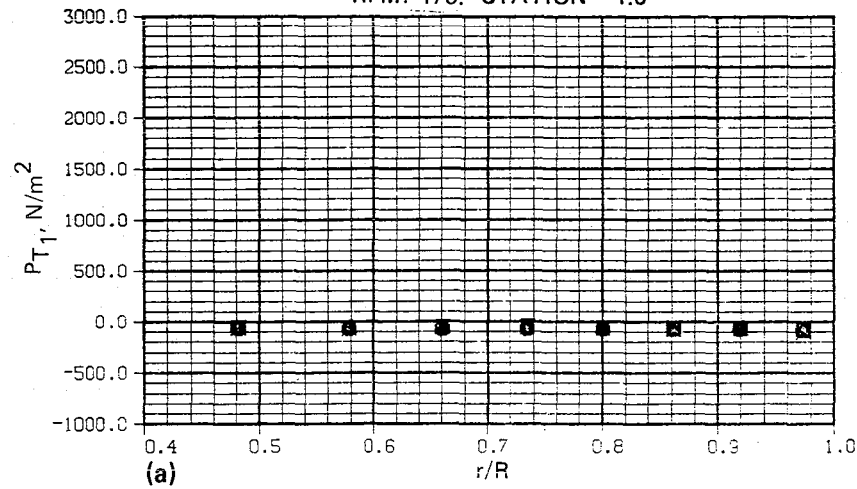
Figure D240.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

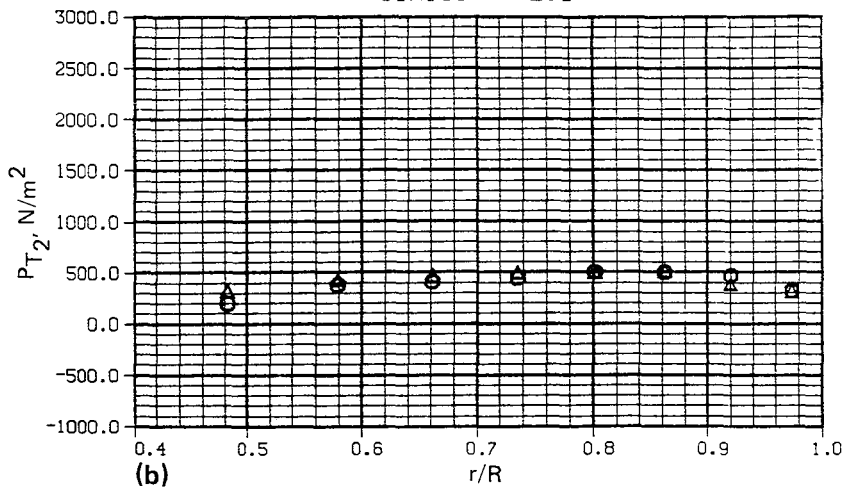
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 369. MASS FLOW: 59.13 slugs/sec

RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

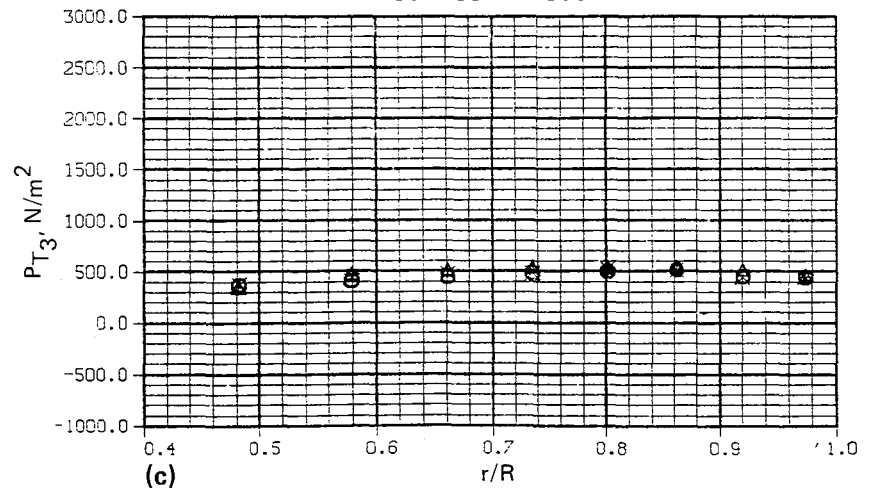


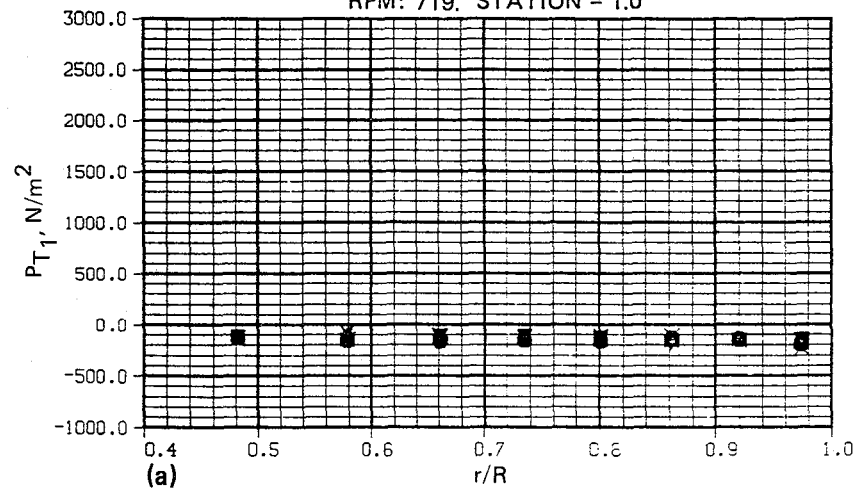
Figure D241.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

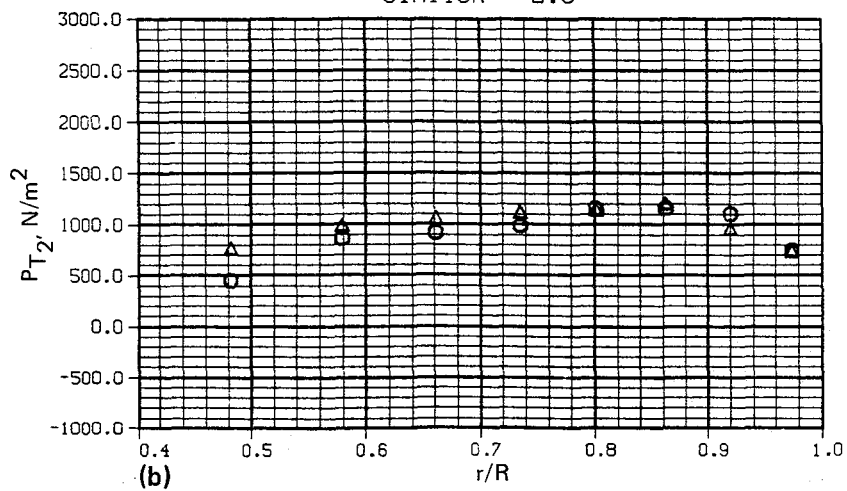
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 370. MASS FLOW: 90.31 slugs/sec

RPM: 719. STATION = 1.0



STATION - 2.0



STATION - 3.0

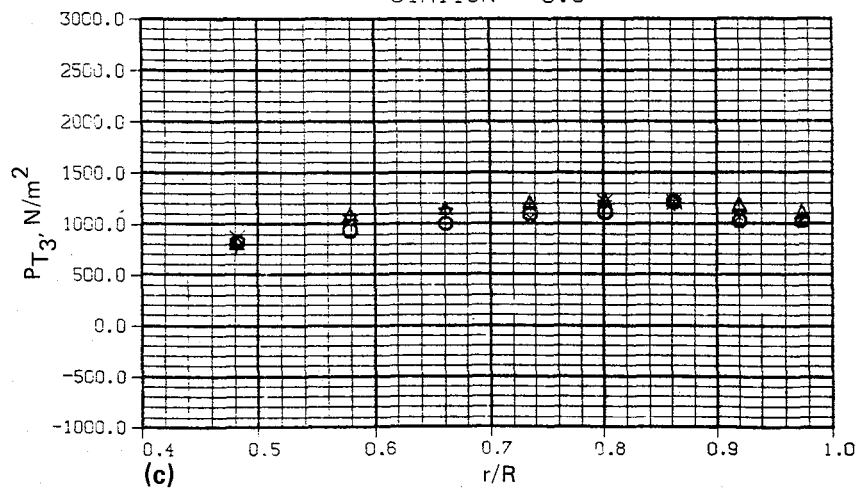


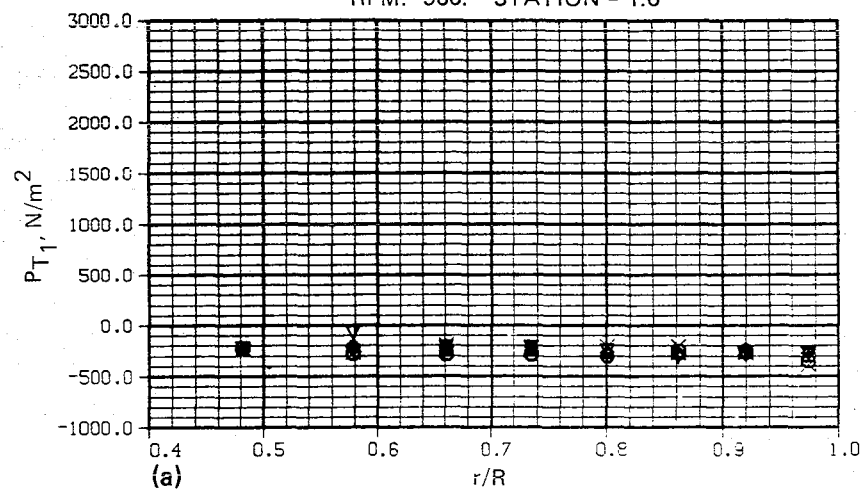
Figure D242.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

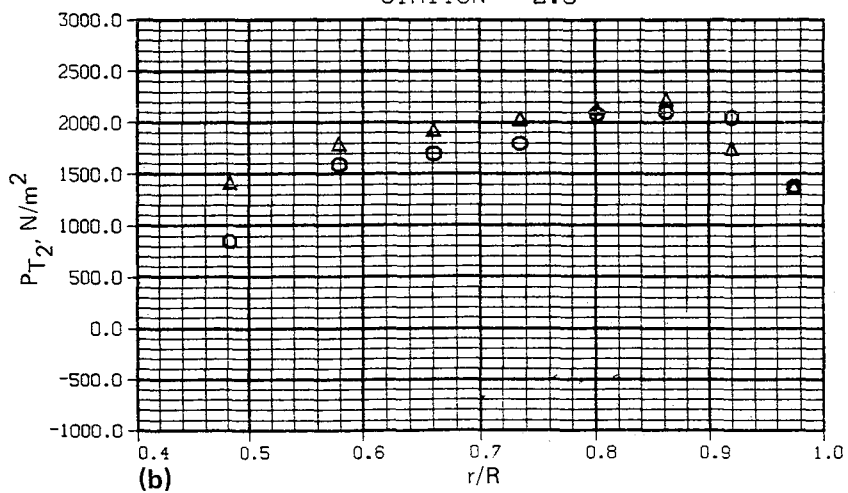
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 371. MASS FLOW: 123.22 slugs/sec

RPM: 966. STATION = 1.0



STATION = 2.0



STATION = 3.0

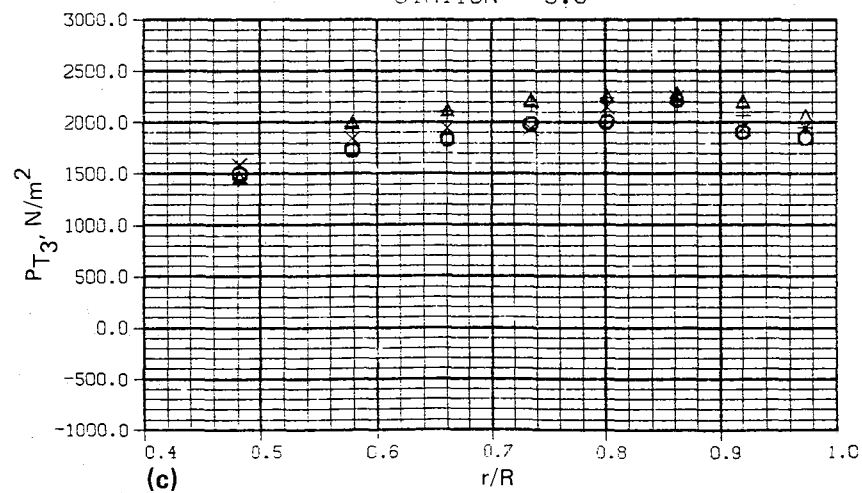


Figure D243.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 372. MASS FLOW: 141.06 slugs/sec

RPM: 1099. STATION = 1.0

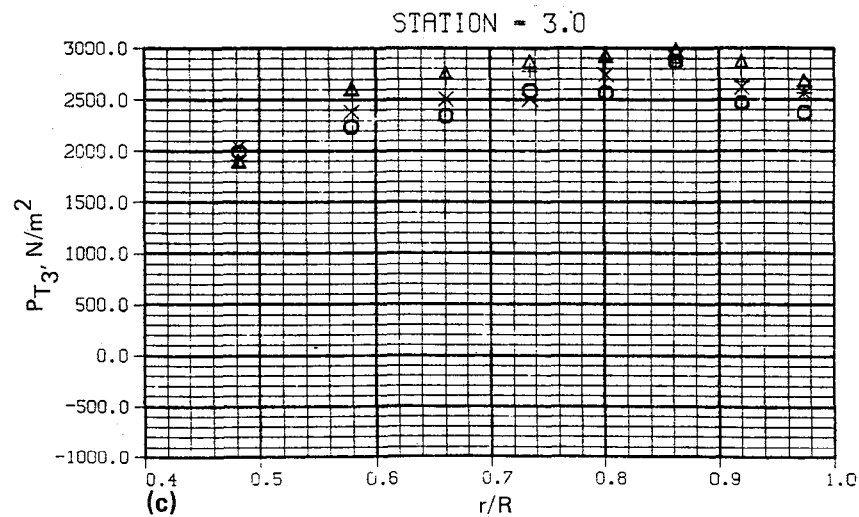
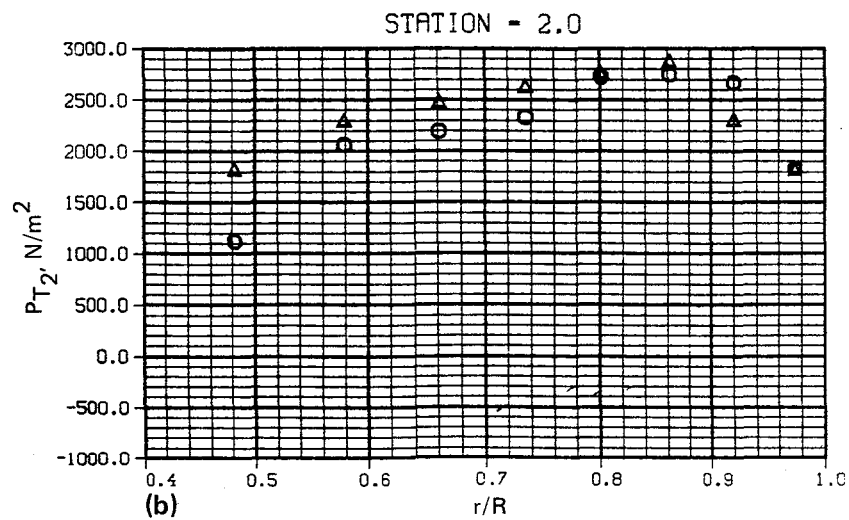
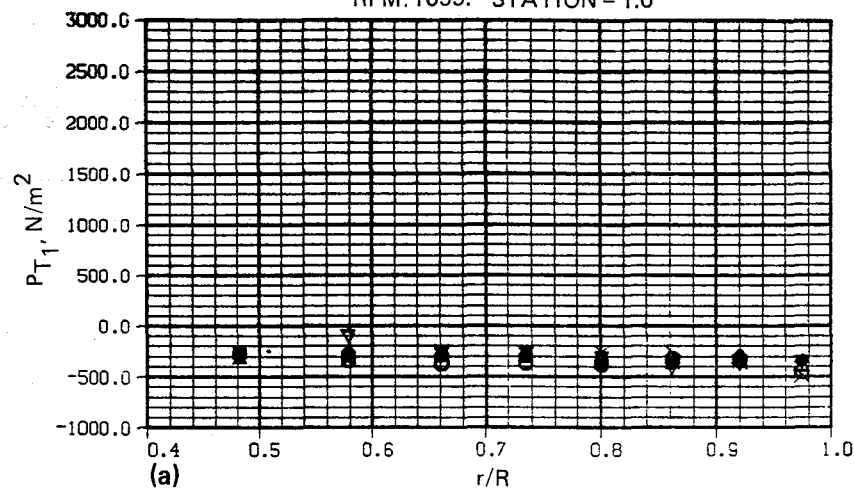
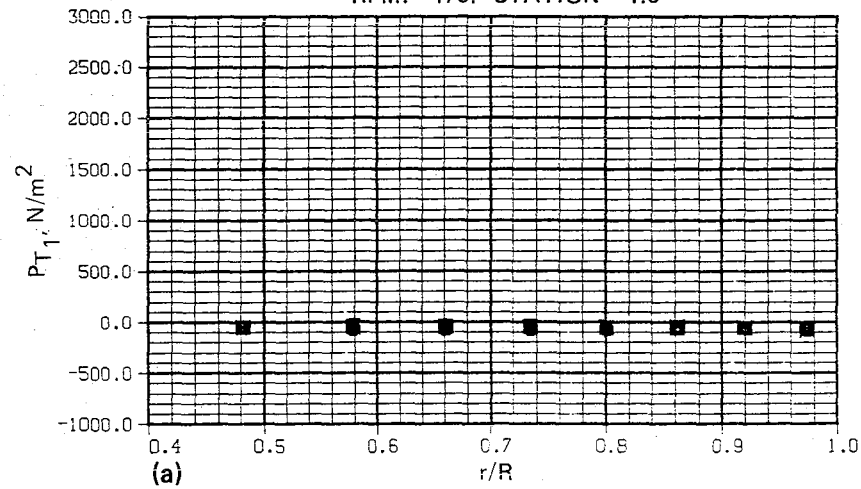
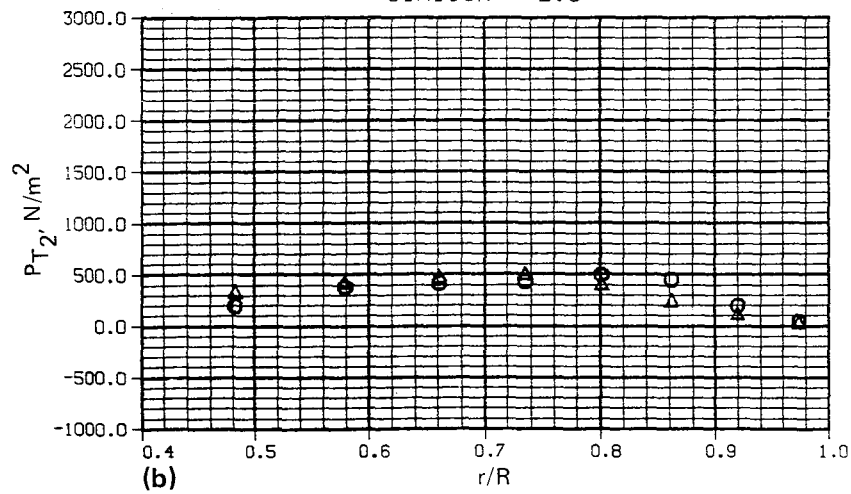


Figure D244.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 53.4
 RUN NO: 373. MASS FLOW: 53.96 slugs/sec
 RPM: 479. STATION = 1.0



STATION = 2.0



STATION = 3.0

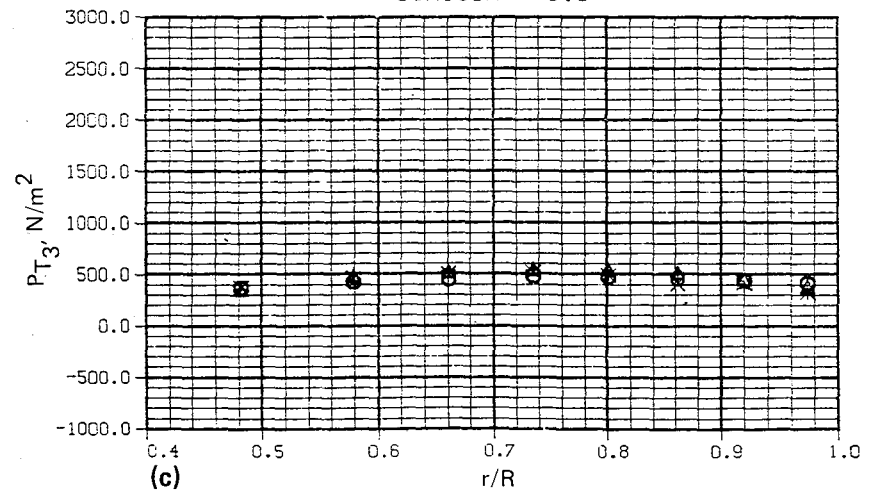


Figure D245.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 374. MASS FLOW: 84.05 slugs/sec

RPM: 720. STATION = 1.0

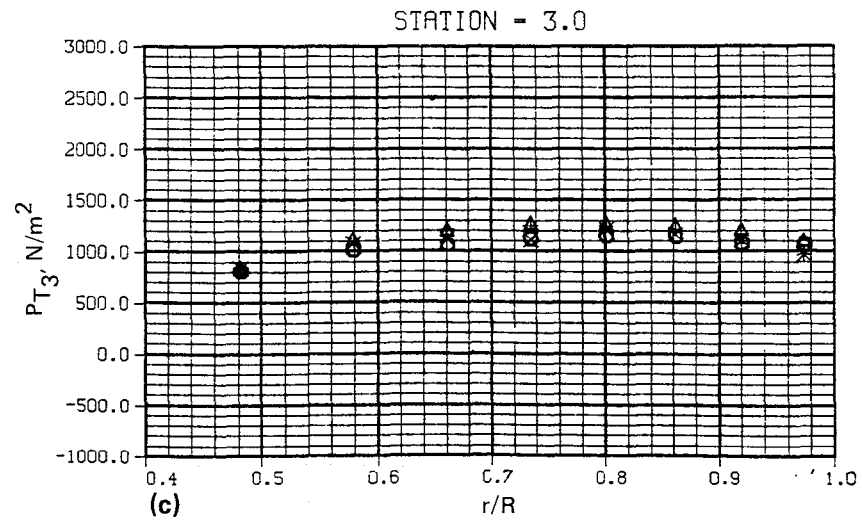
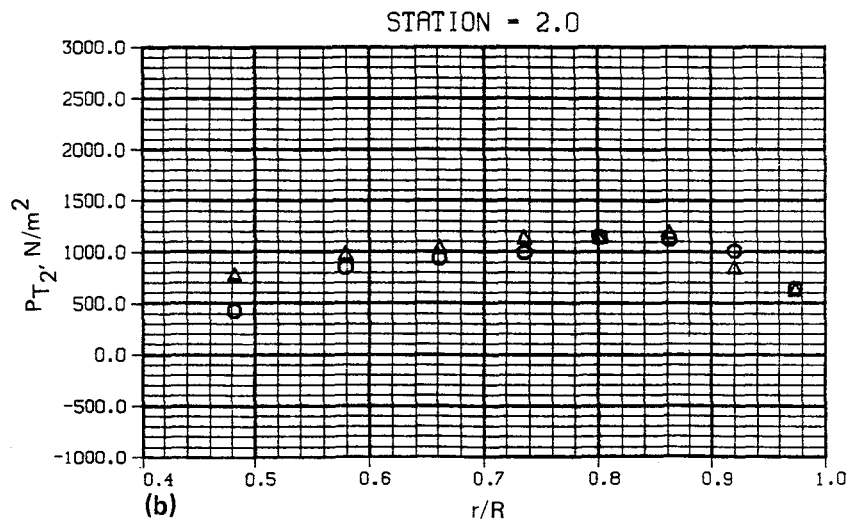
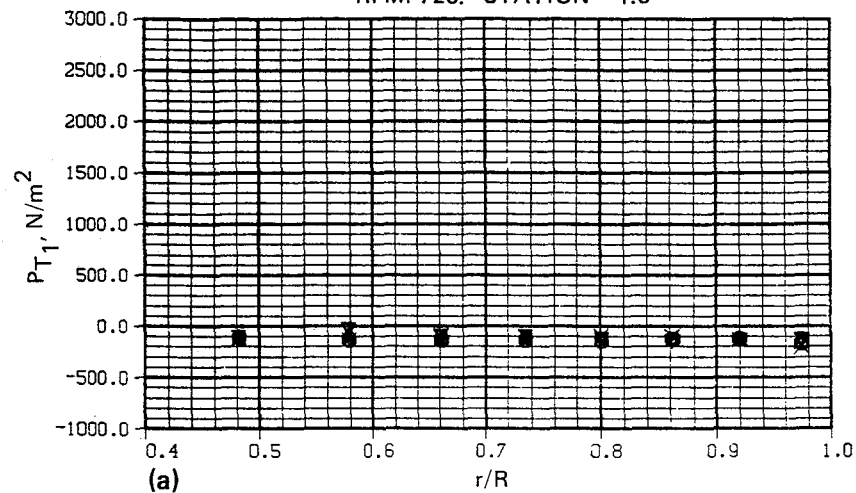


Figure D246.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 375. MASS FLOW: 114.27slugs/sec

RPM: 963. STATION = 1.0

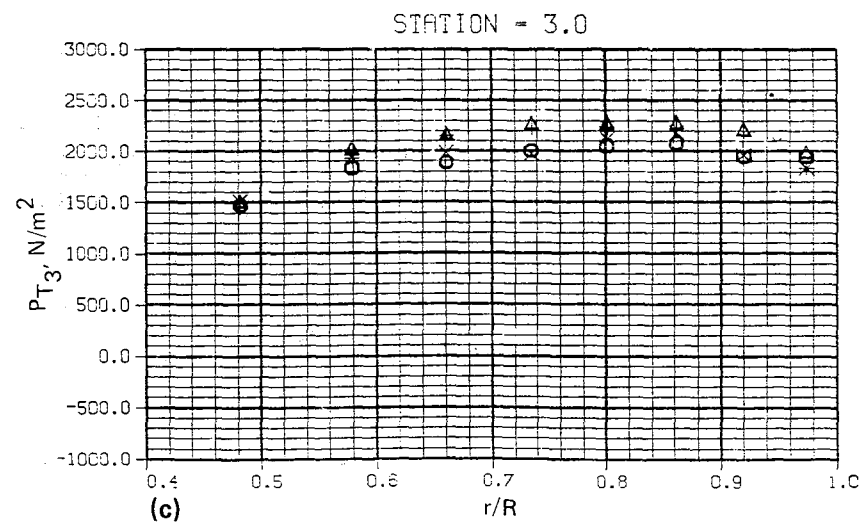
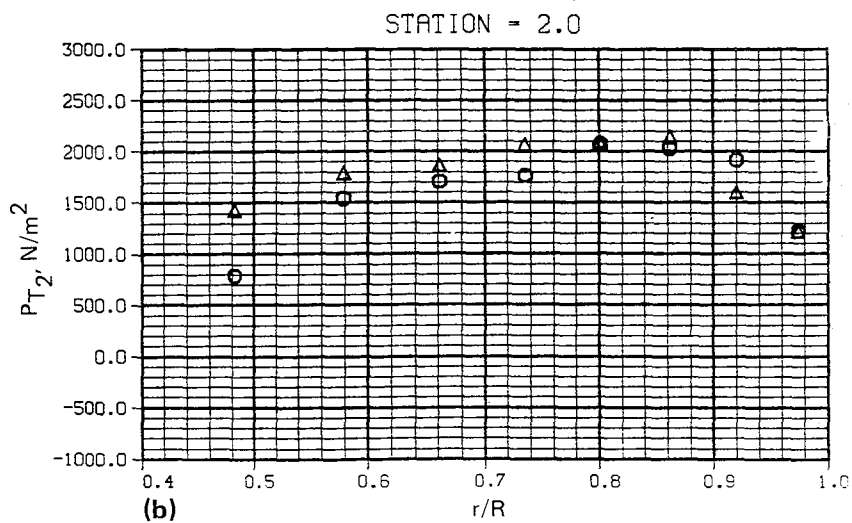
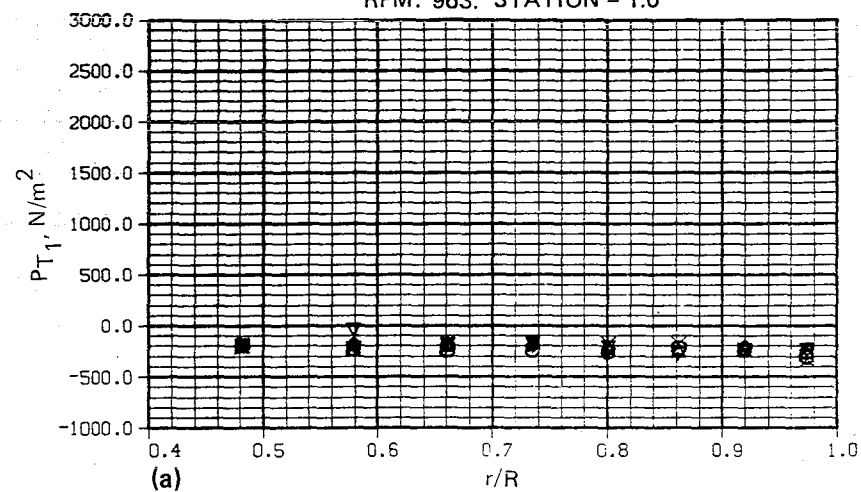


Figure D247.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO:376. MASS FLOW: 132.49 slugs/sec

RPM:1105. STATION = 1.0

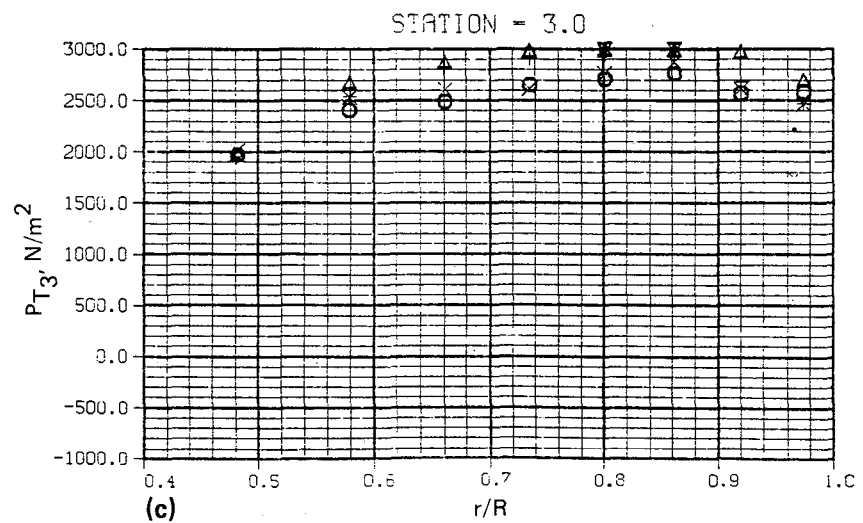
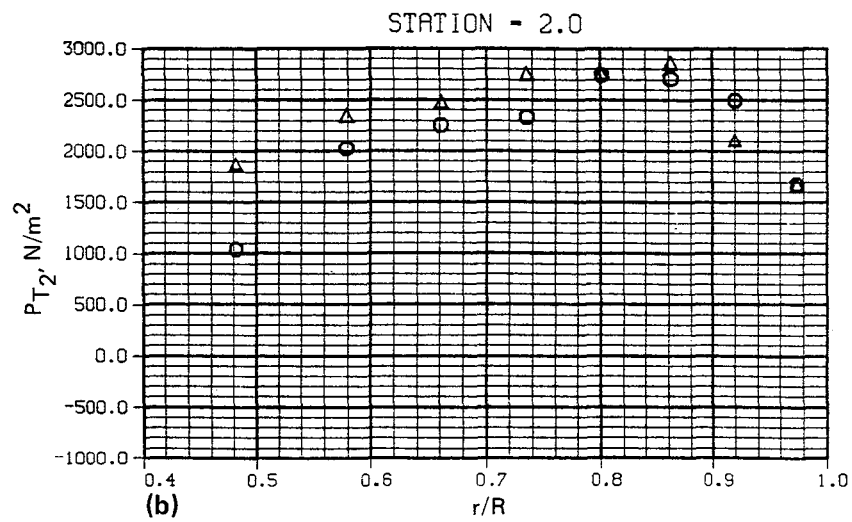
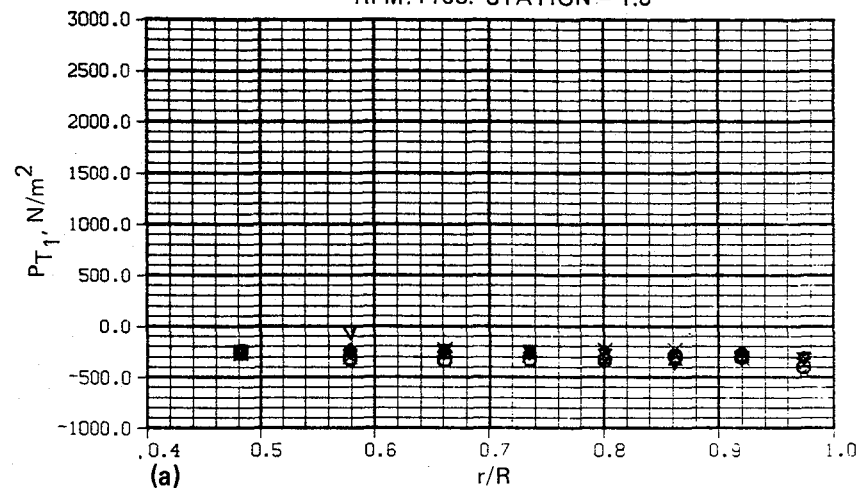


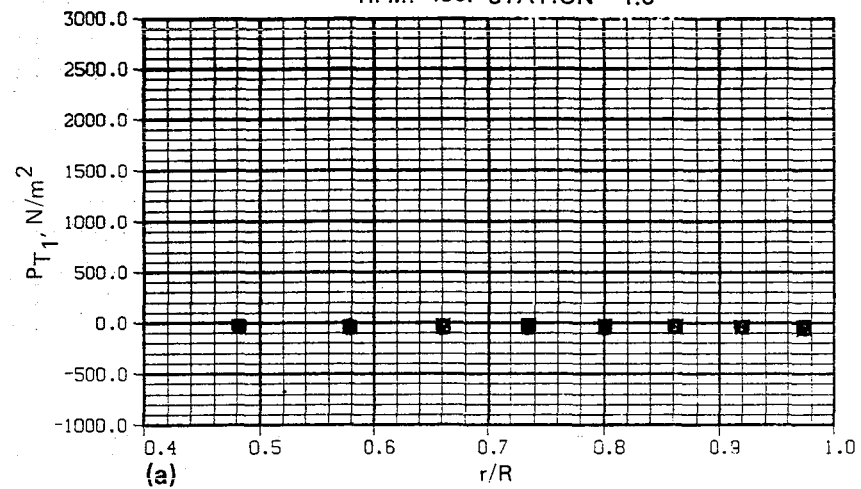
Figure D248.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

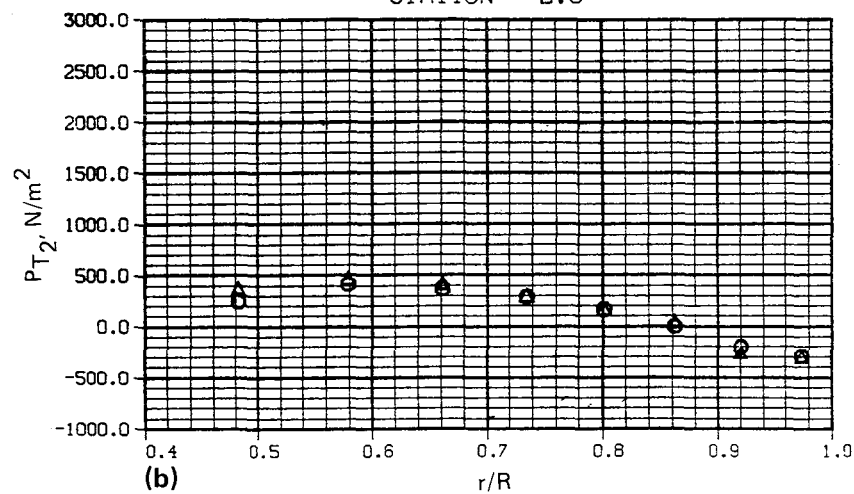
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 377. MASS FLOW: 43.54 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

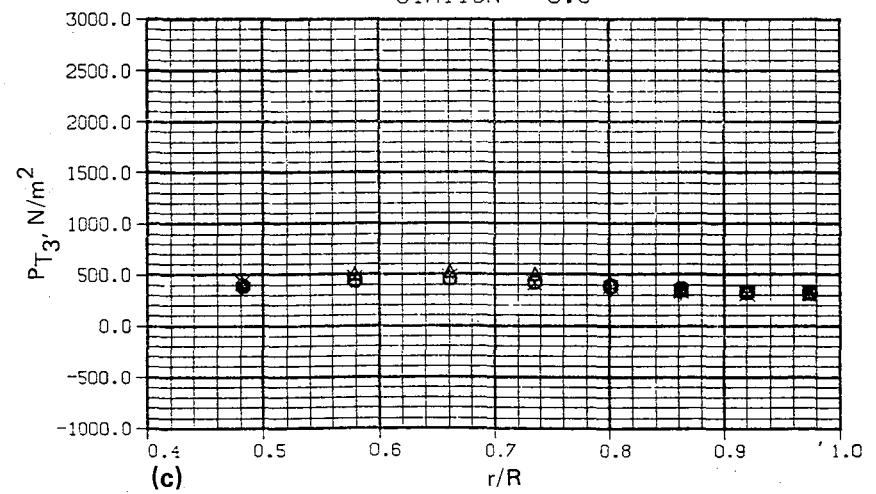


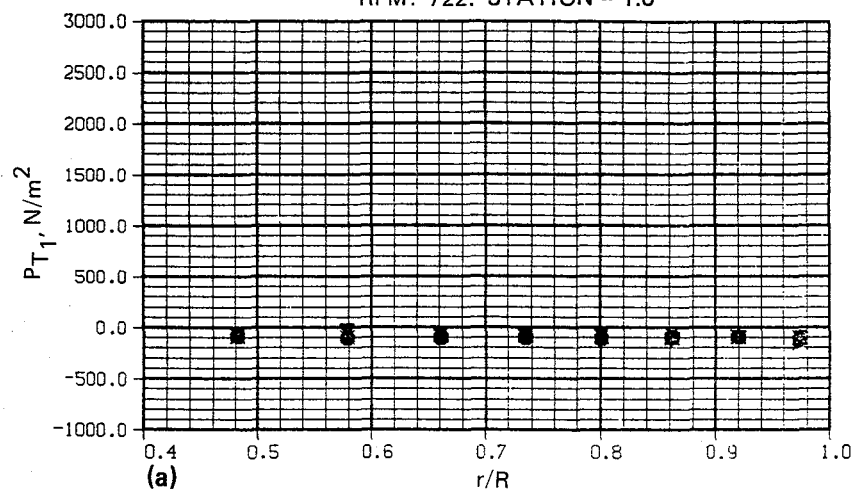
Figure D249.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

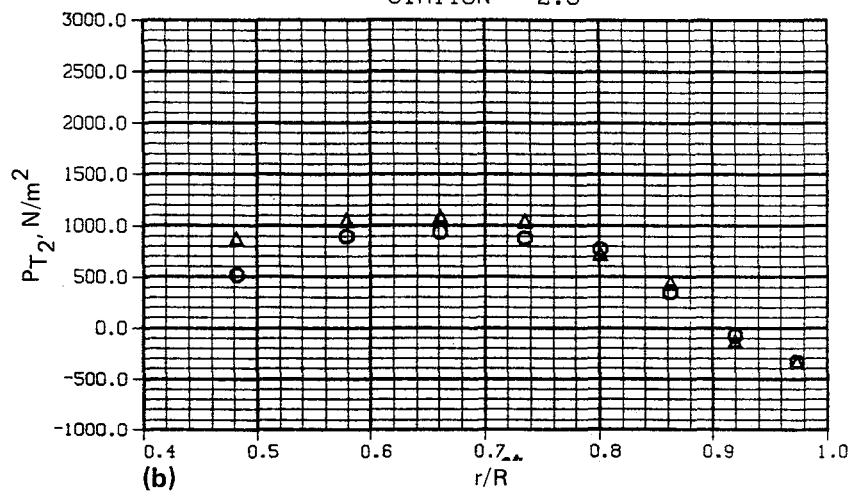
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 378. MASS FLOW: 70.16 slugs/sec

RPM: 722. STATION = 1.0



STATION - 2.0



STATION - 3.0

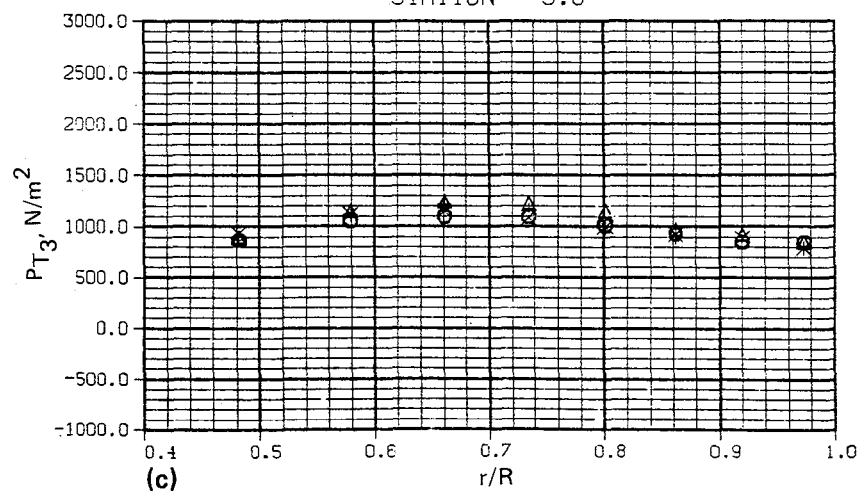
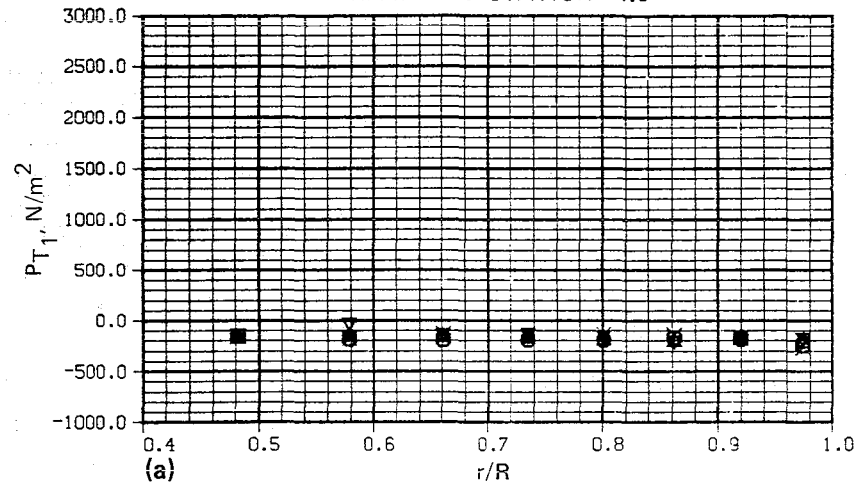
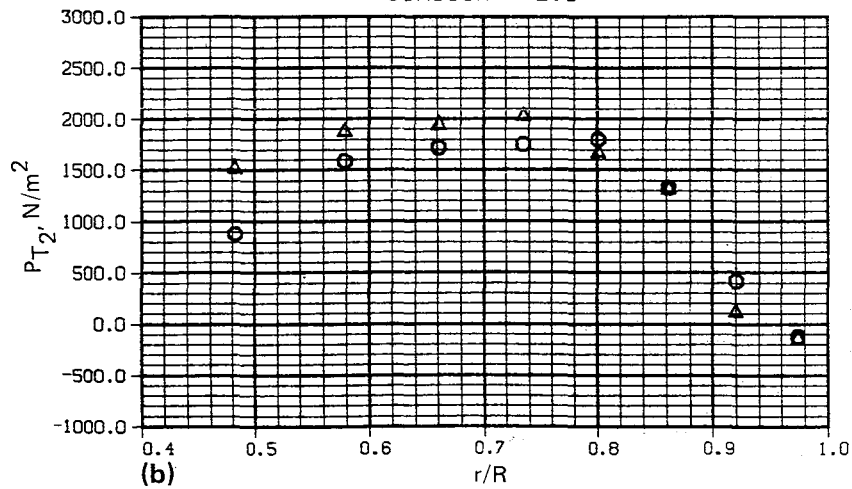


Figure D250.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 53.4
 RUN NO: 379. MASS FLOW: 97.99 slugs/sec
 RPM: 968. STATION = 1.0



STATION = 2.0



STATION = 3.0

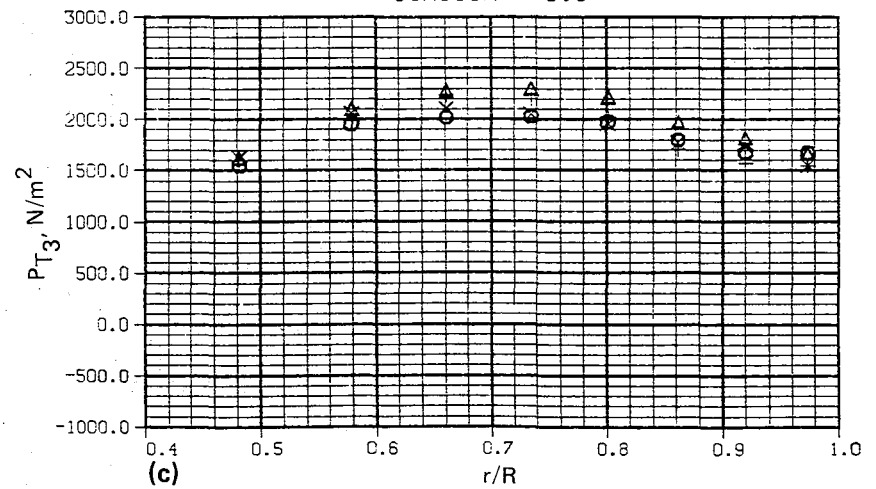


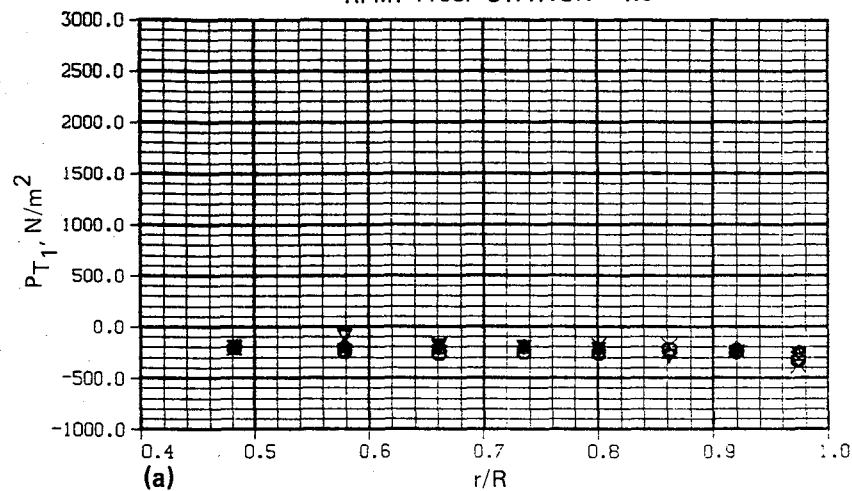
Figure D251.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

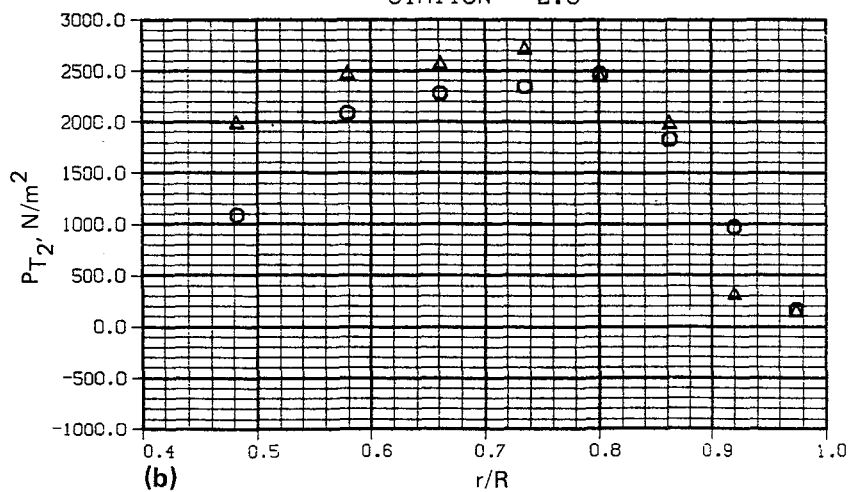
BLADE TYPE: 2. BLADE ANGLE: 53.4

RUN NO: 380. MASS FLOW: 114.72 slugs/sec

RPM: 1108. STATION = 1.0



STATION = 2.0



STATION = 3.0

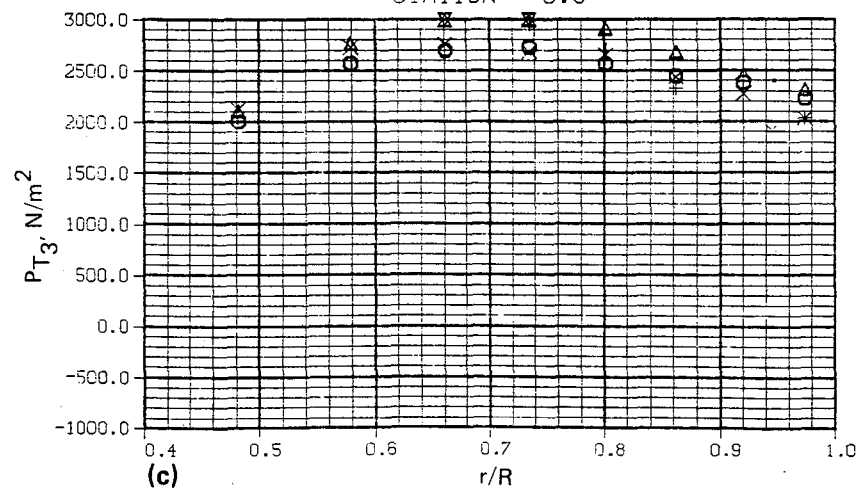


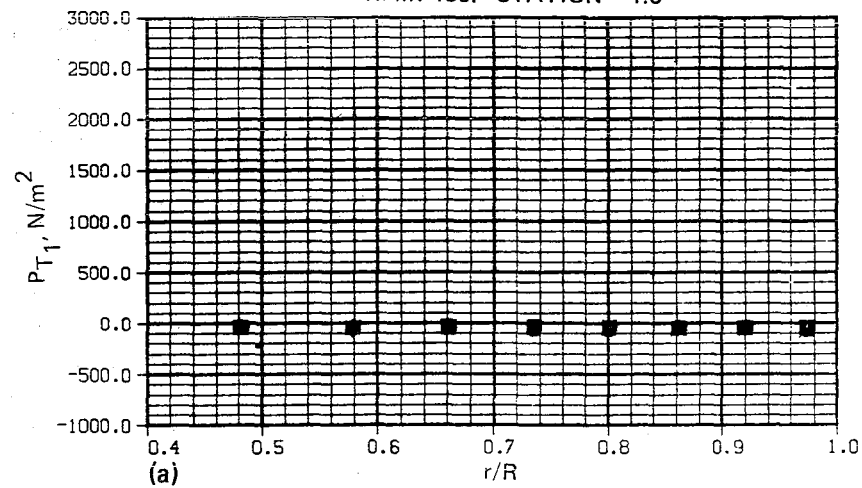
Figure D252.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

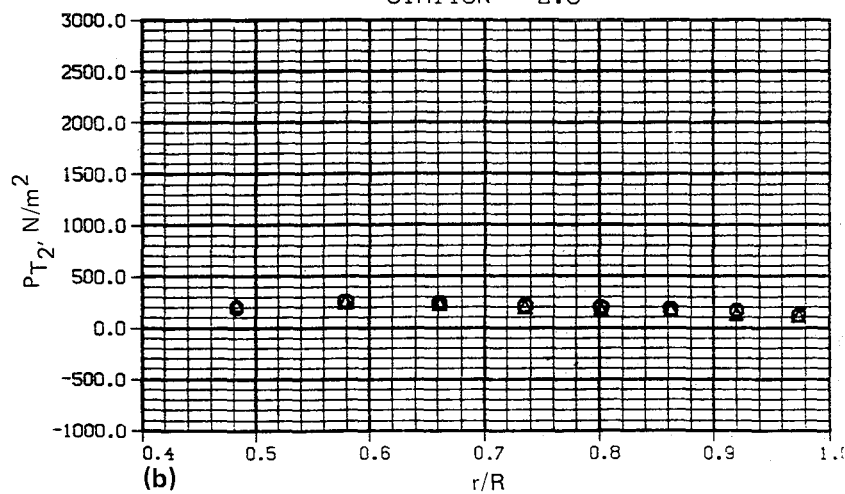
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 385. MASS FLOW: 48.74 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

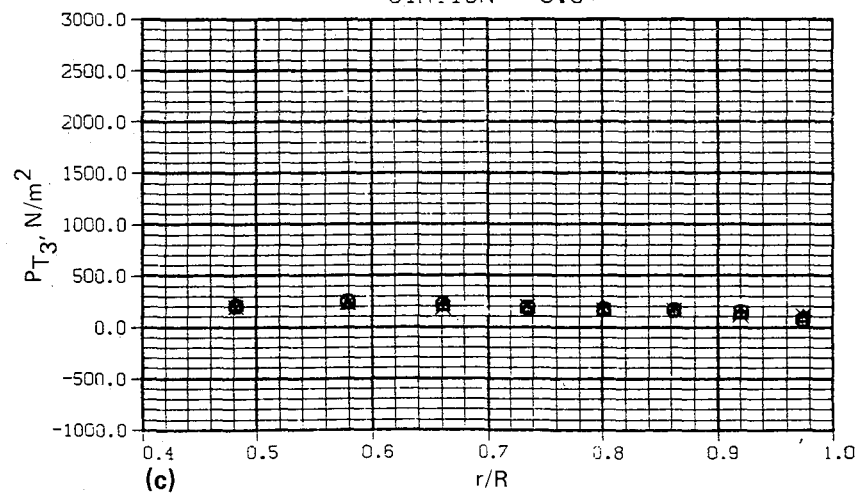


Figure D253.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO:386. MASS FLOW: 74.03 slugs/sec

RPM = 720. STATION = 1.0

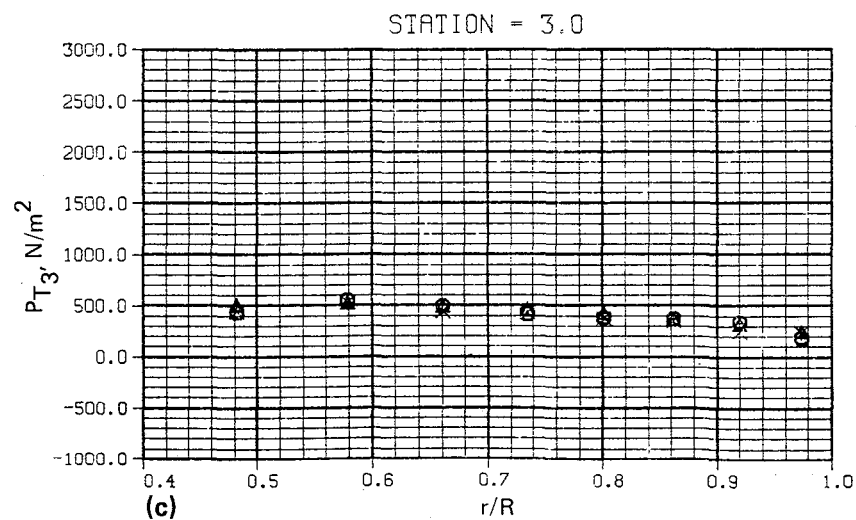
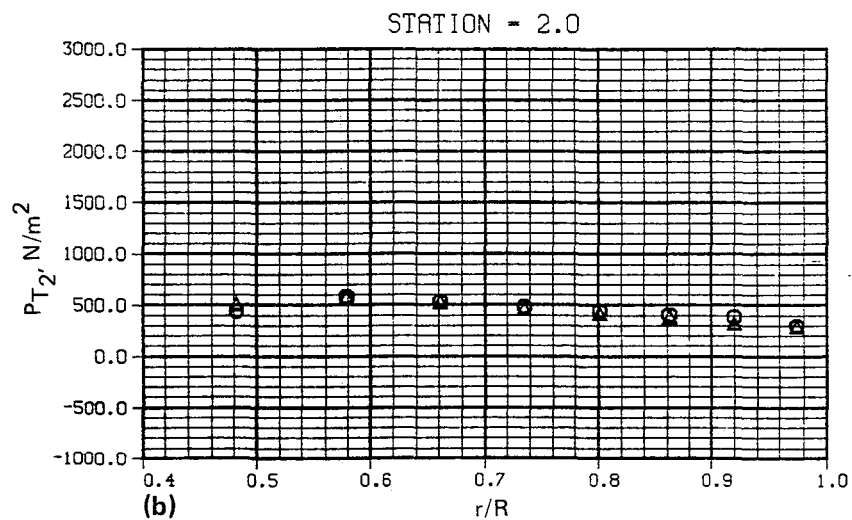
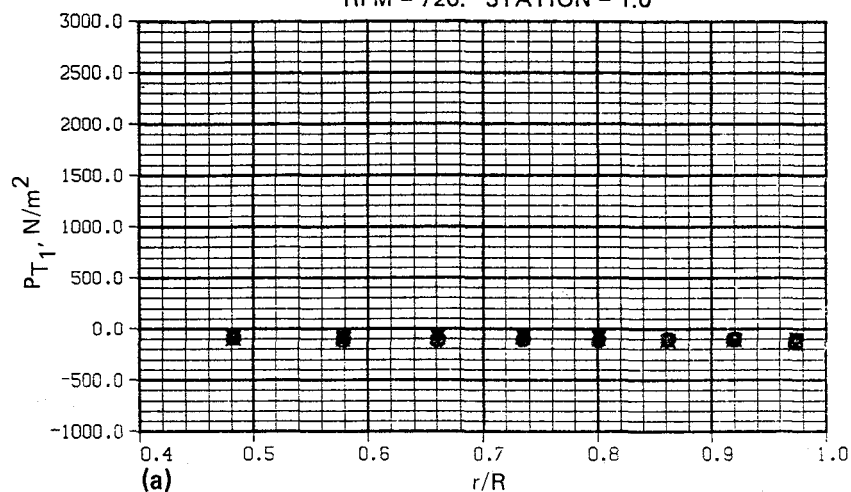
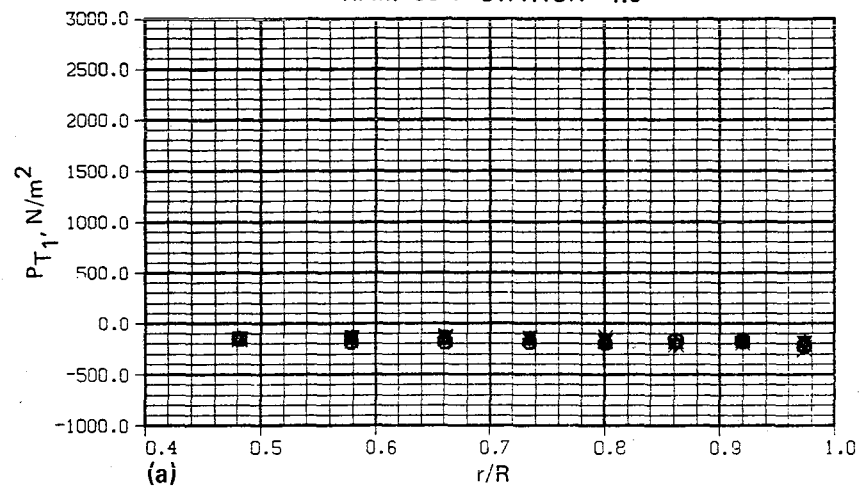
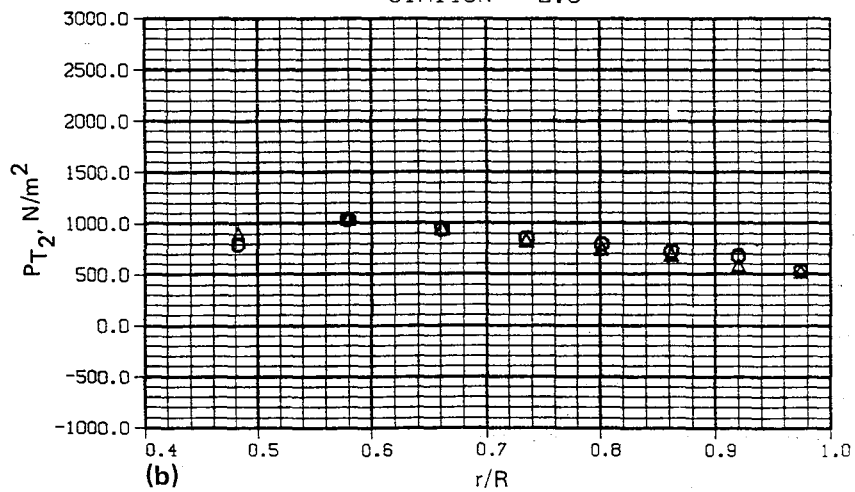


Figure D254.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 387. MASS FLOW: 99.52 slugs/sec
 RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

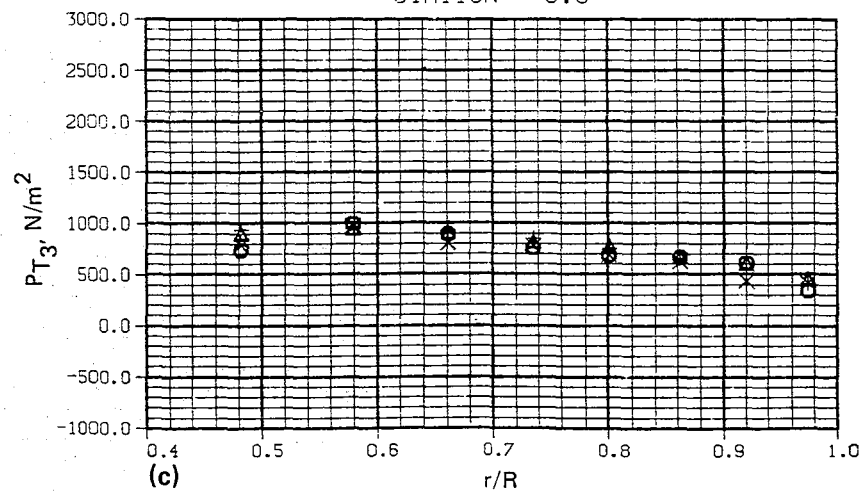


Figure D255.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 388. MASS FLOW: 124.36 slugs/sec

RPM: 1200. STATION = 1.0

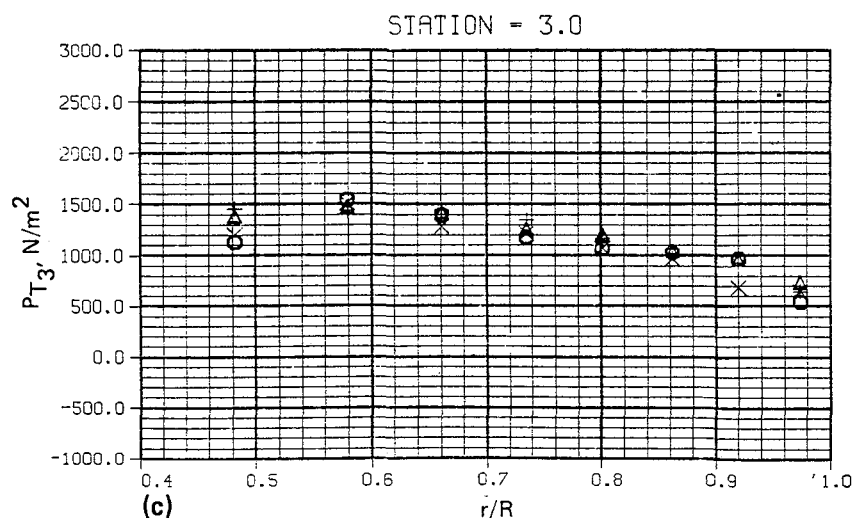
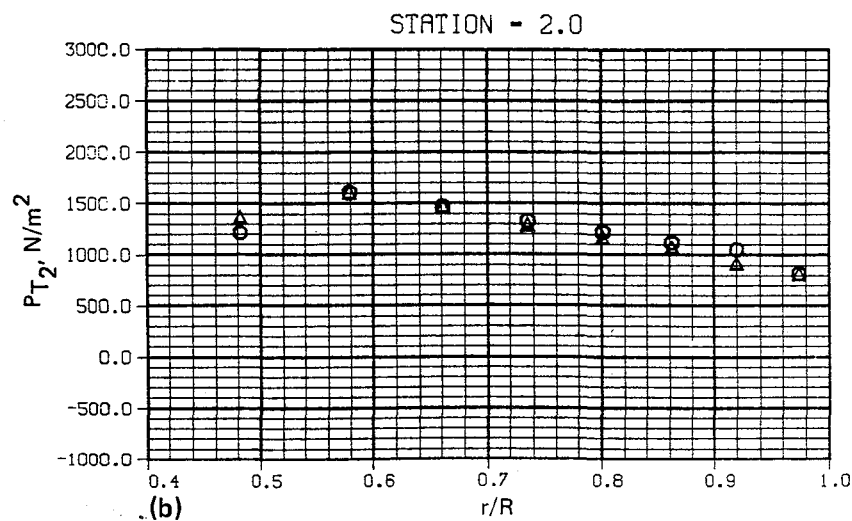
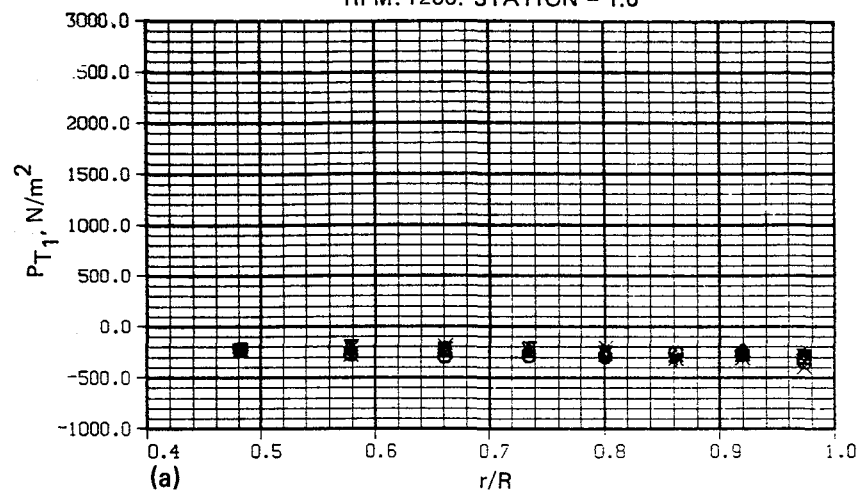
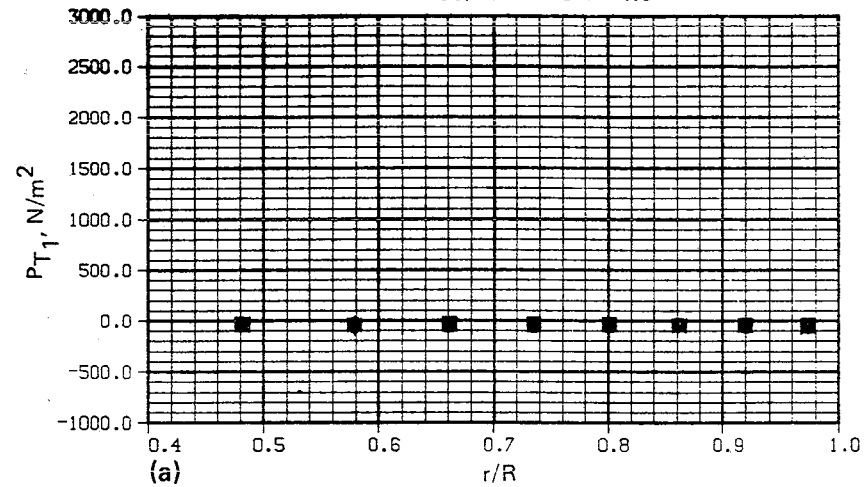
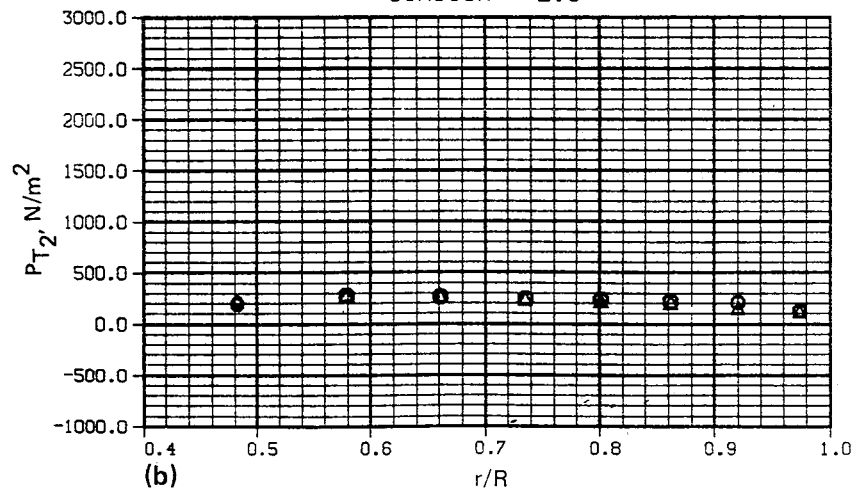


Figure D256.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 389. MASS FLOW: 46.85 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

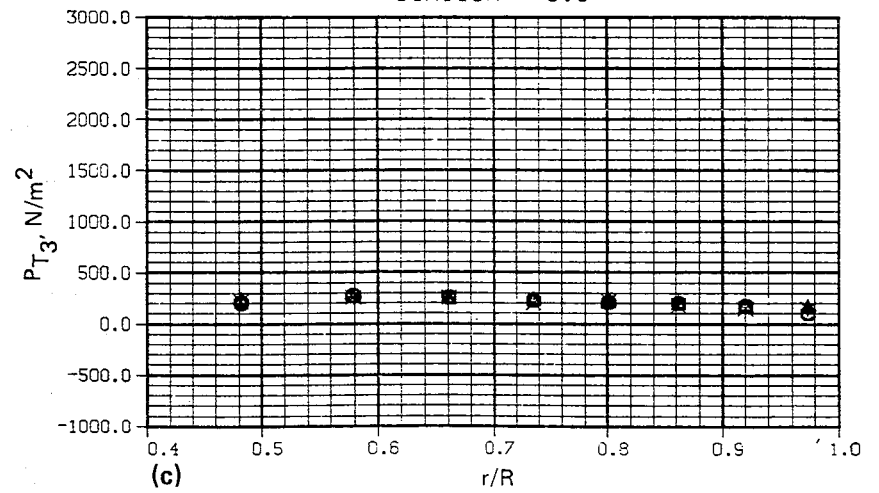


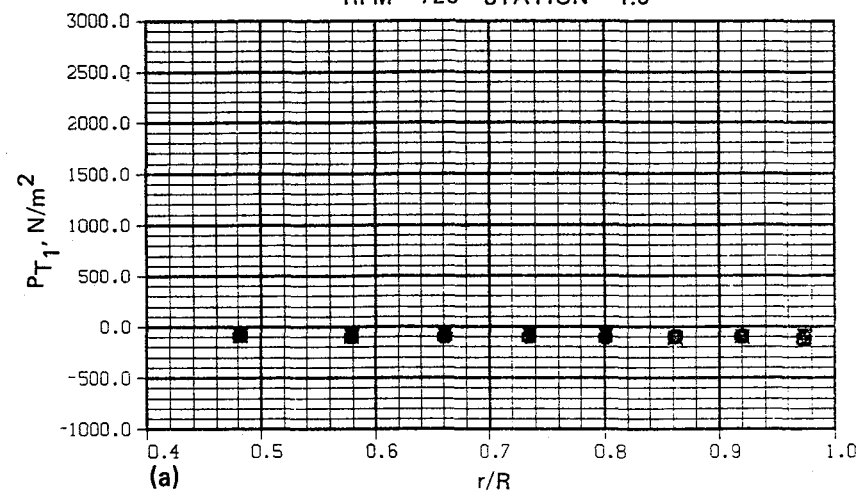
Figure D257.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

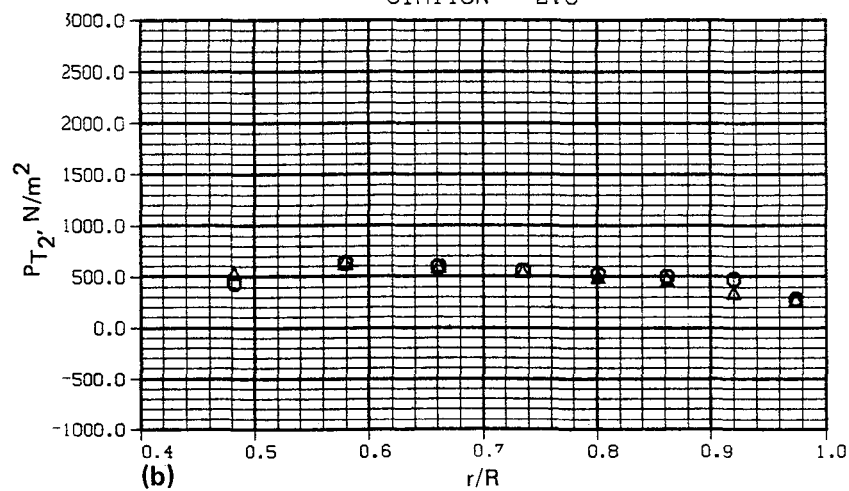
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 390 MASS FLOW: 70.86 slugs/sec

RPM = 720 STATION = 1.0



STATION = 2.0



STATION = 3.0

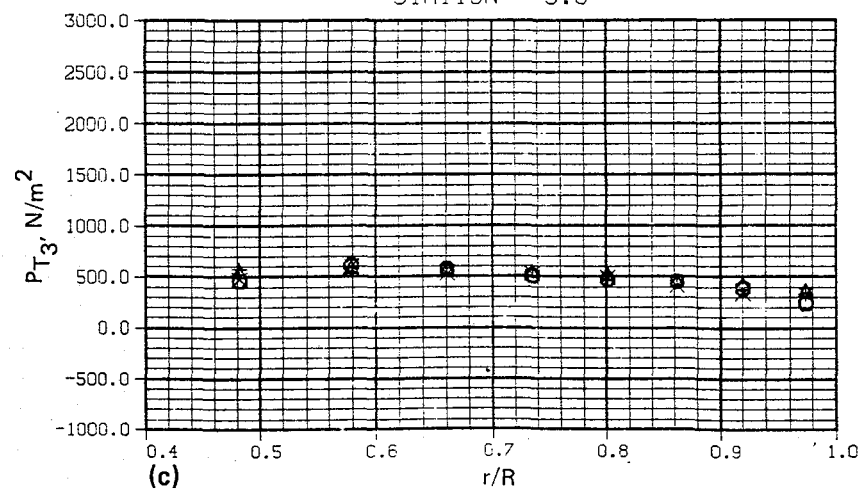


Figure D258.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 391. MASS FLOW: 95.41 slugs/sec

RPM = 960. STATION = 1.0

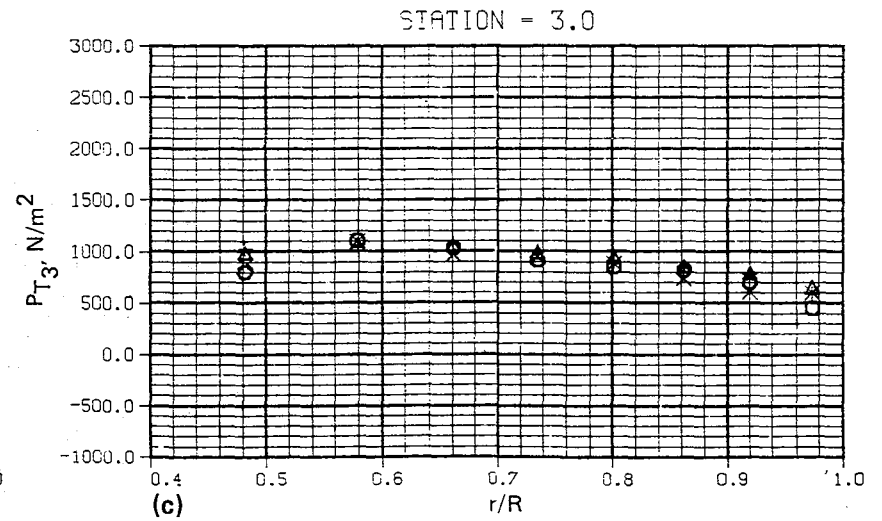
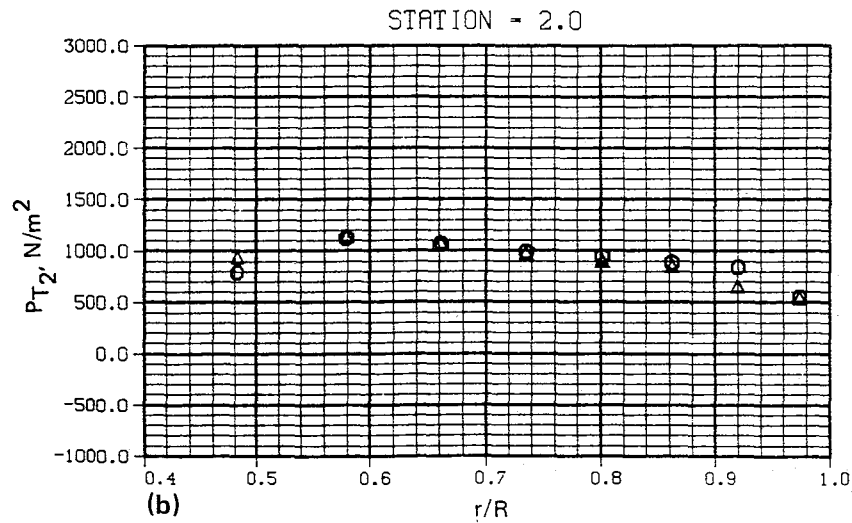
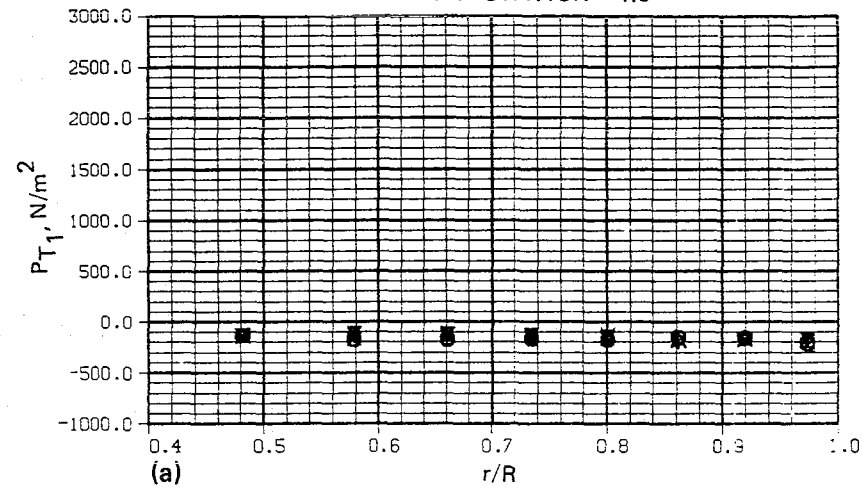


Figure D259.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 392. MASS FLOW: 120.23 slugs/sec

RPM: 1200. STATION = 1.0

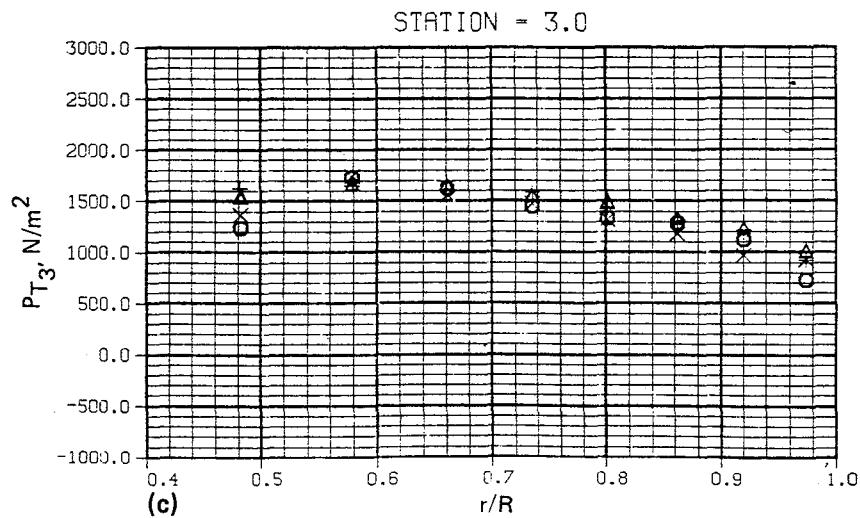
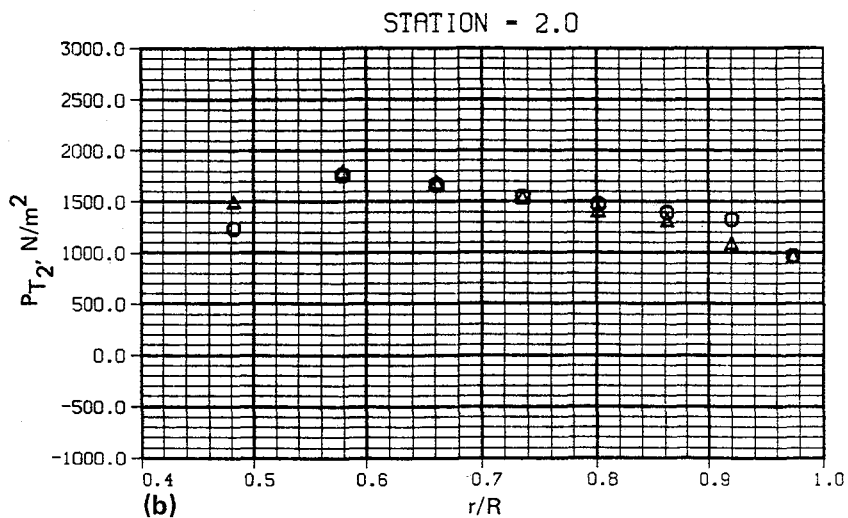
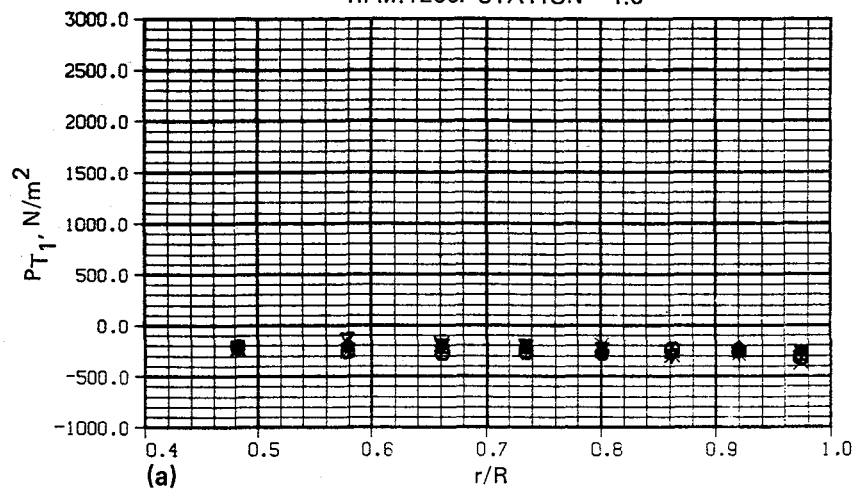
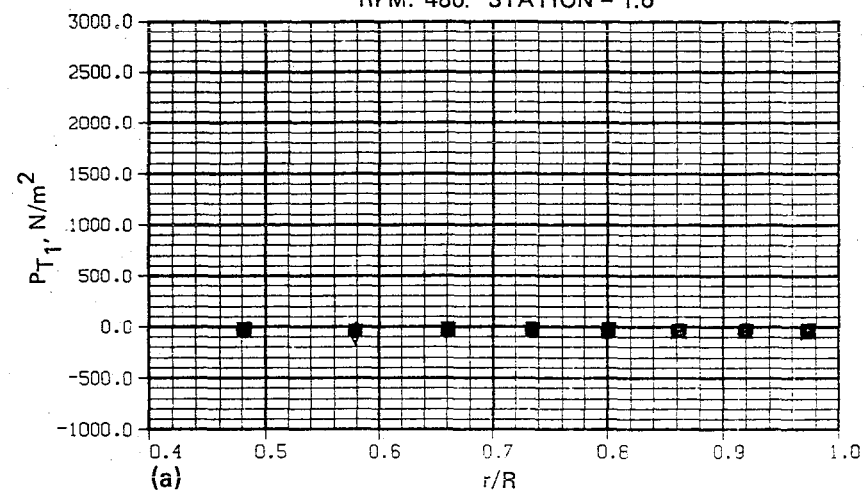
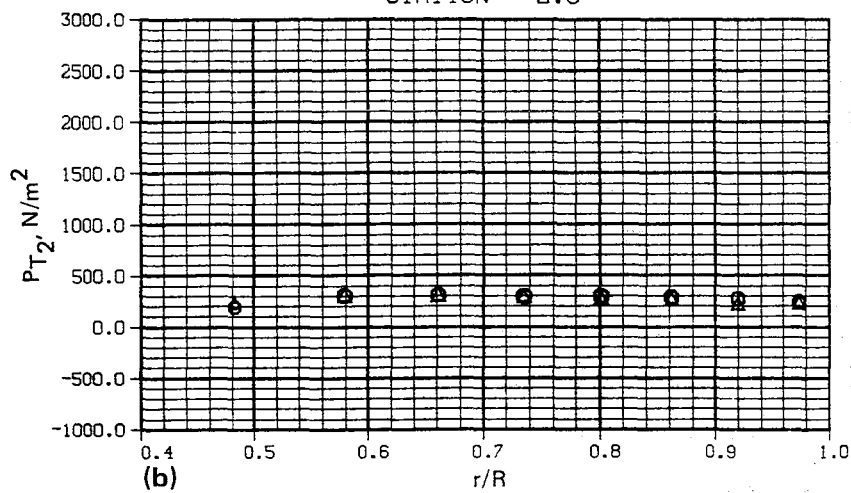


Figure D260.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 393. MASS FLOW: 43.28 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

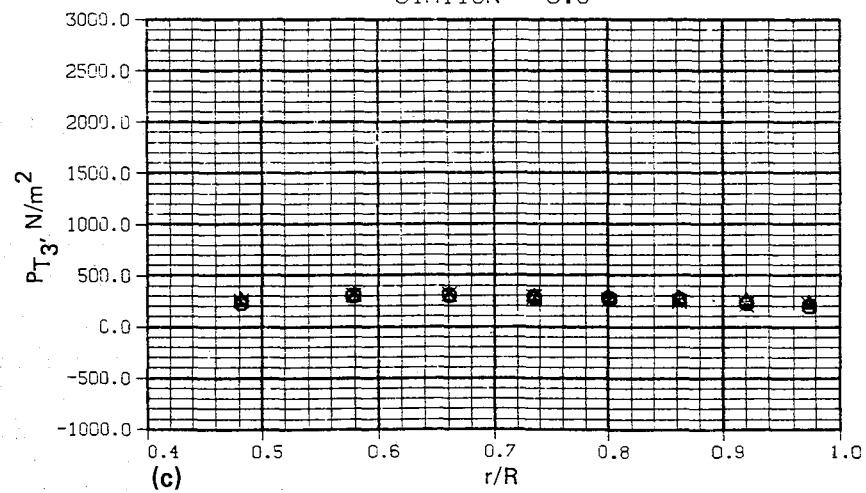


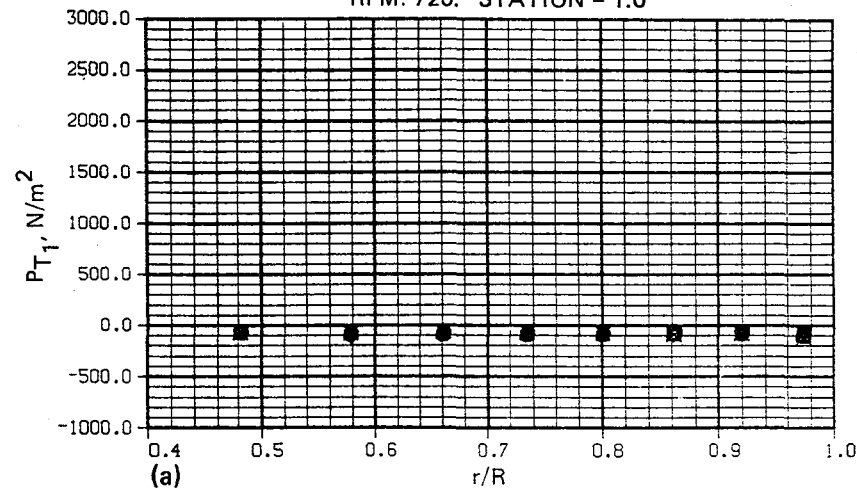
Figure D261.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

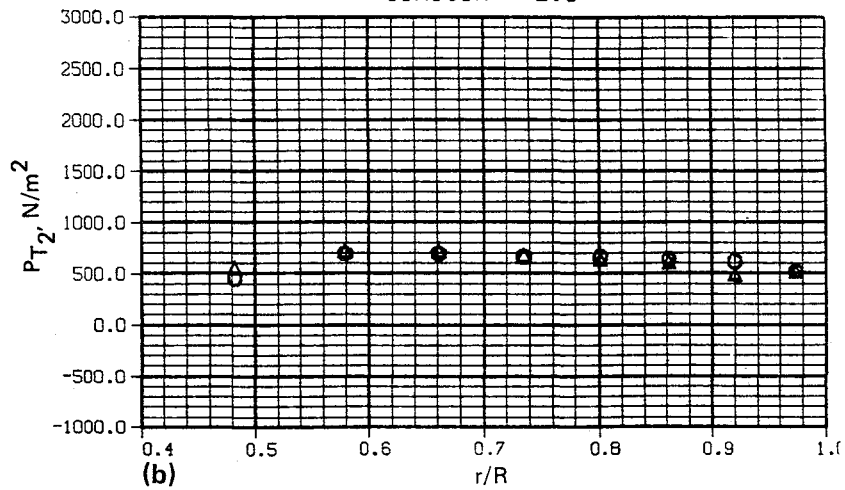
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 394. MASS FLOW: 65.70 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

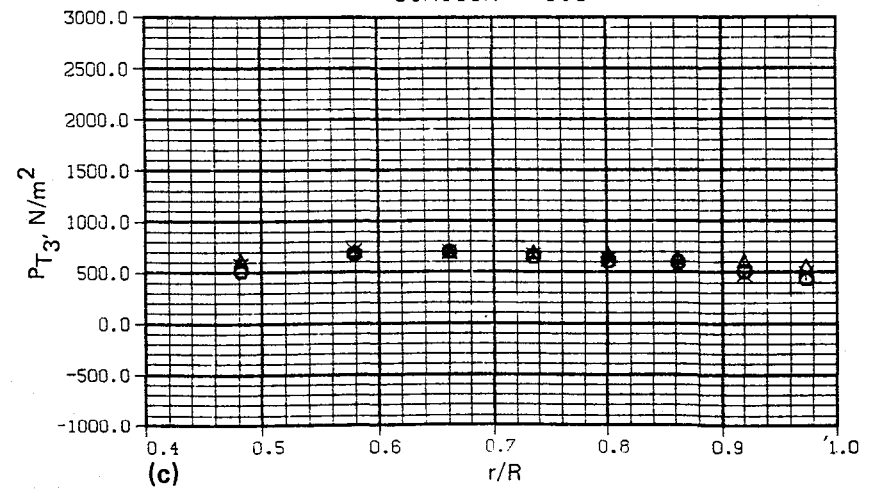


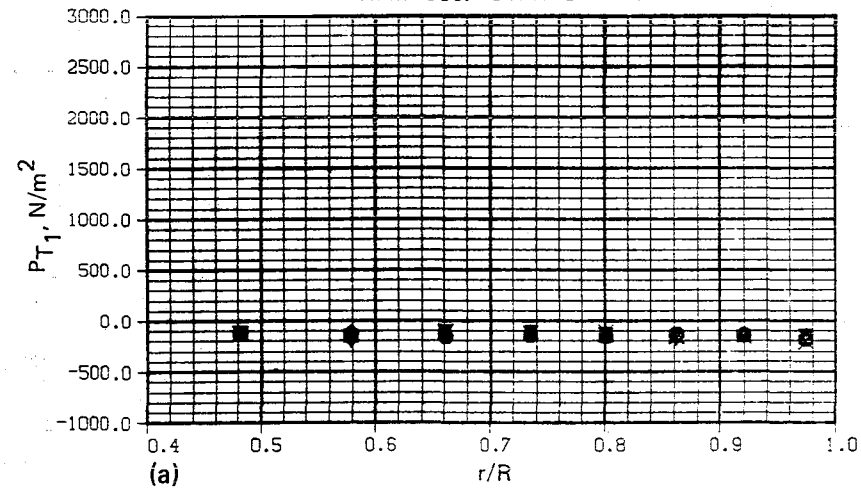
Figure D262.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

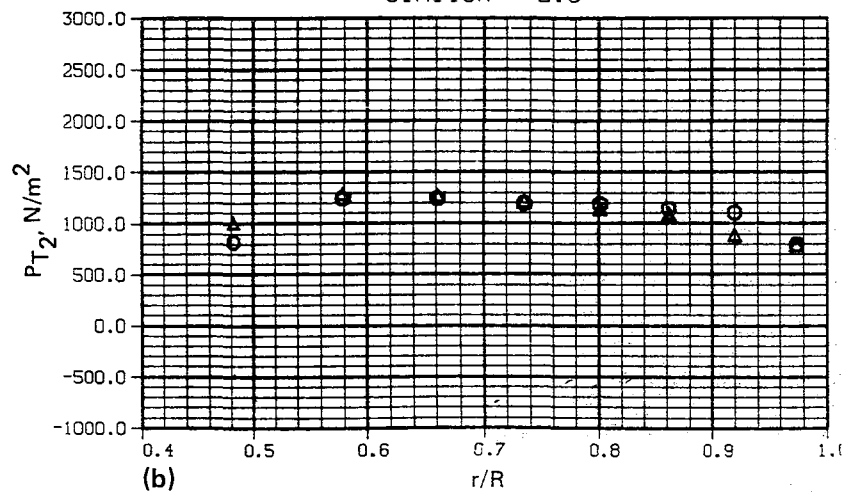
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 395. MASS FLOW: 88.87 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

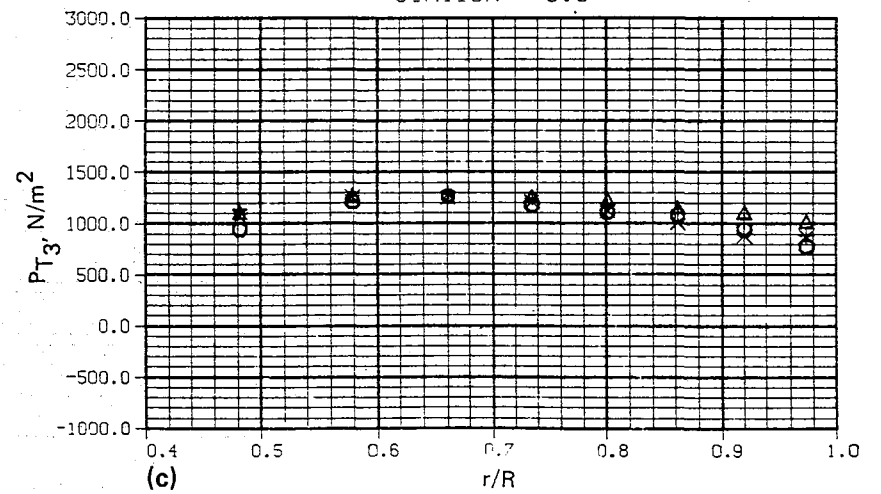


Figure D263.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE 2. BLADE ANGLE: 29.2

RUN NO: 396 MASS FLOW: 111.50 slugs/sec

RPM: 1200. STATION = 1.0

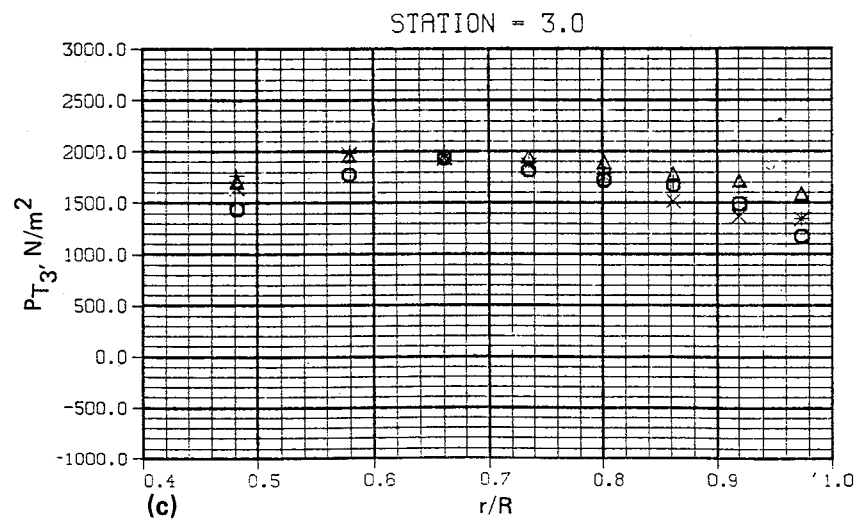
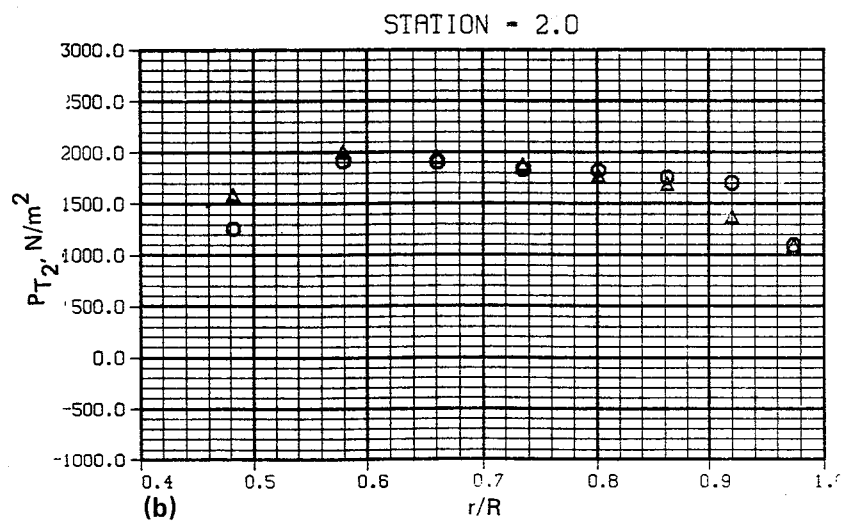
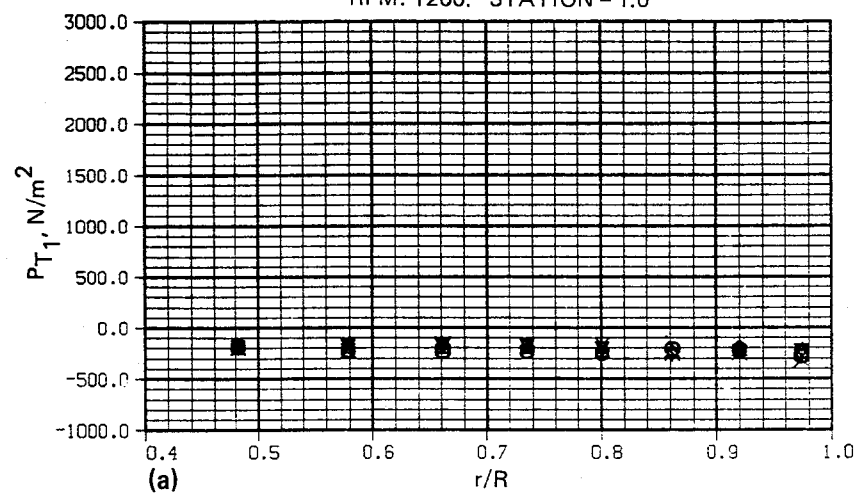


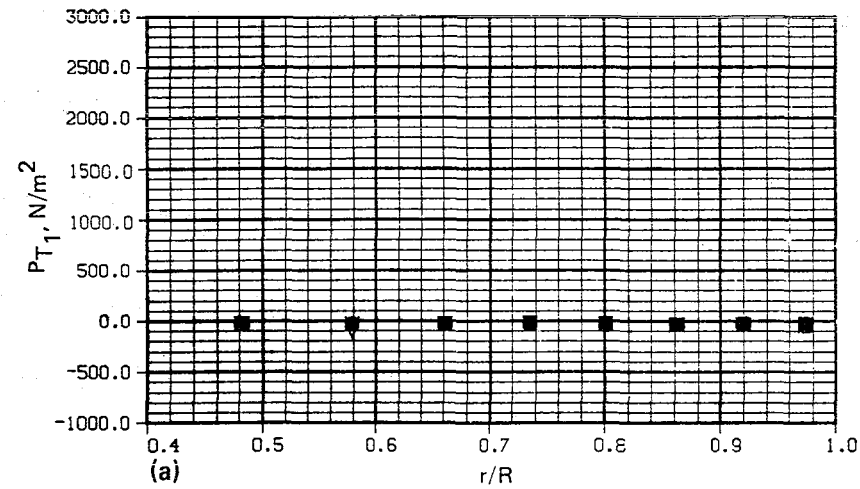
Figure D264.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

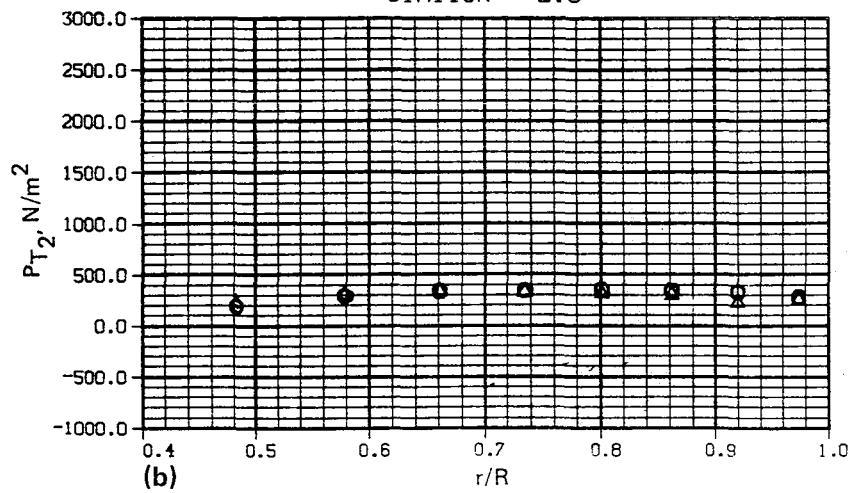
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 397. MASS FLOW: 38.92 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

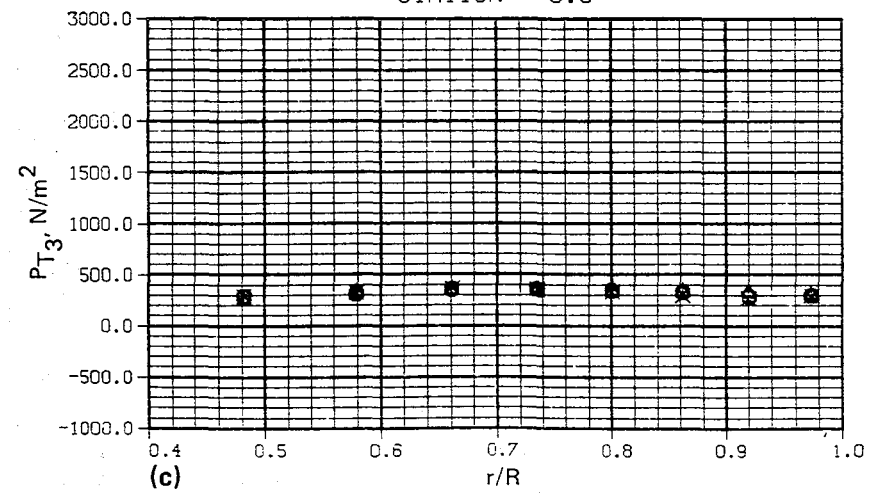


Figure D265.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 398. MASS FLOW: 59.21 slugs/sec

RPM: 720. STATION = 1.0

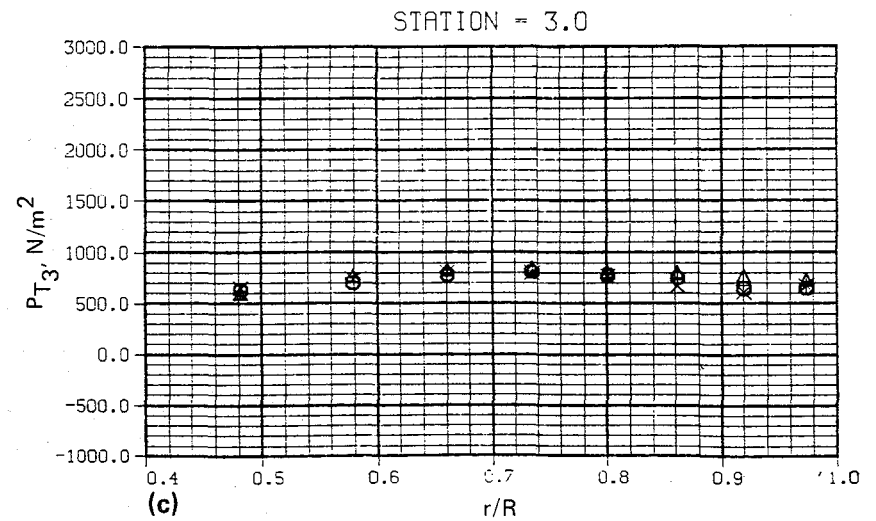
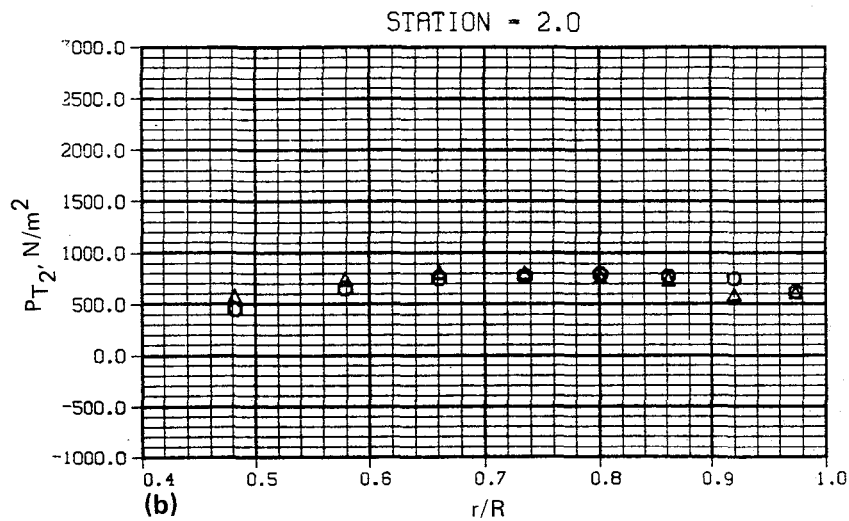
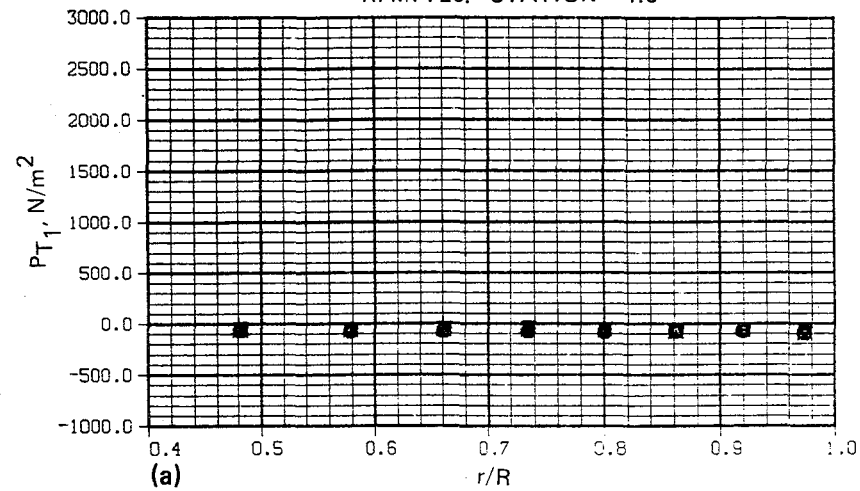


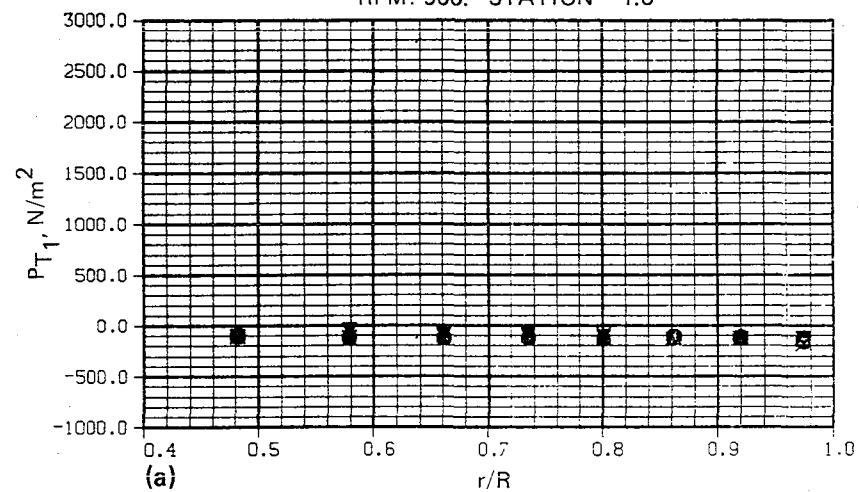
Figure D266.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

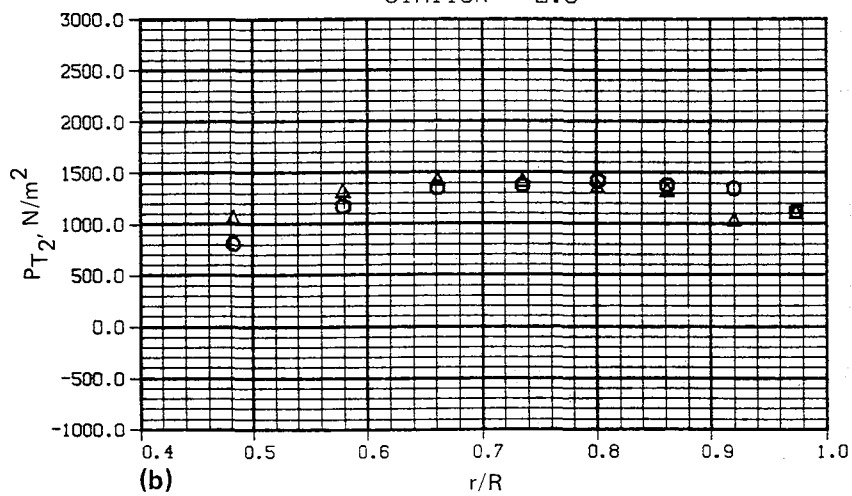
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 399. MASS FLOW: 80.15 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

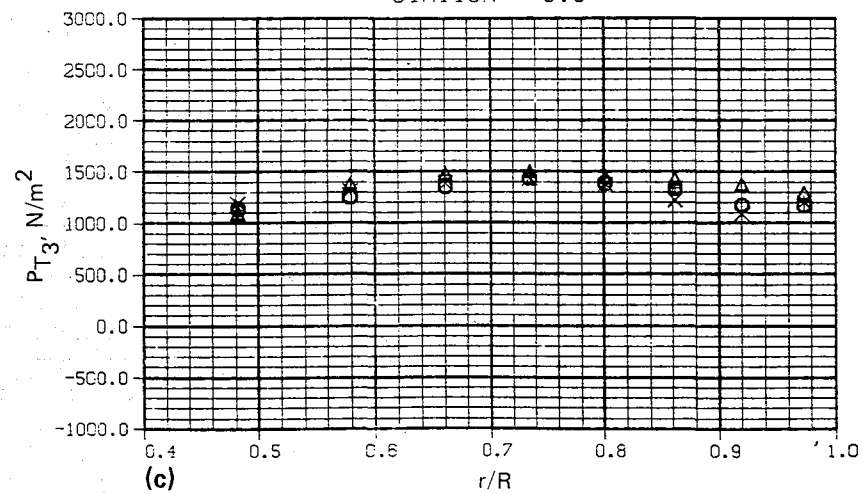


Figure D267.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 400. MASS FLOW: 101.56 slugs/sec

RPM: 1200. STATION = 1.0

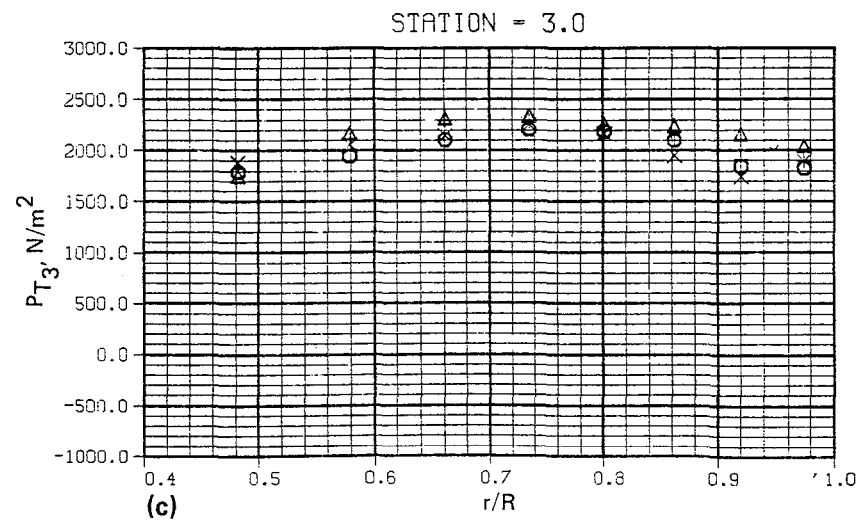
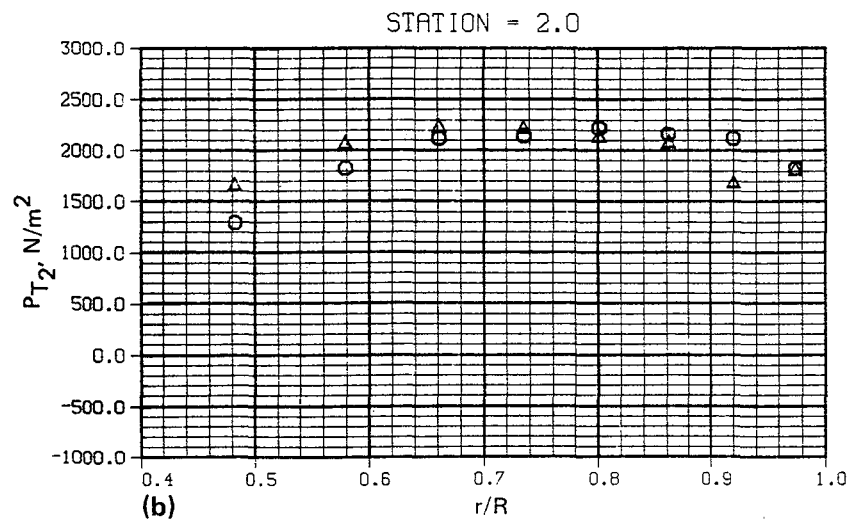
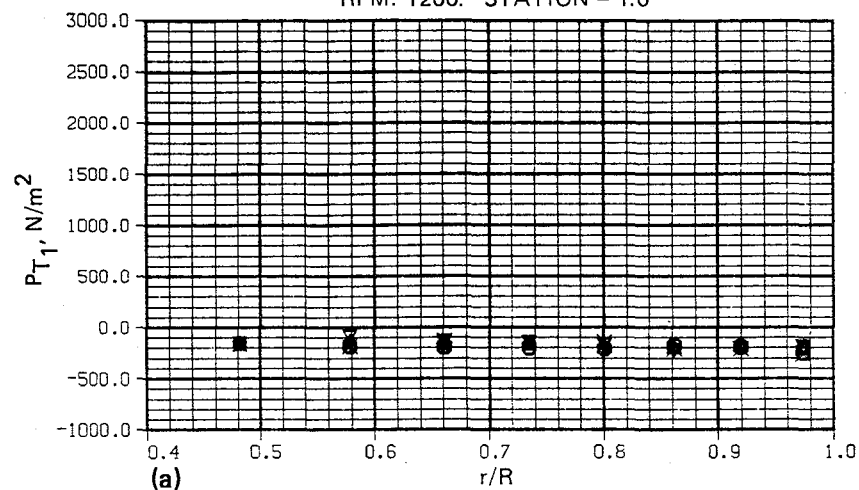
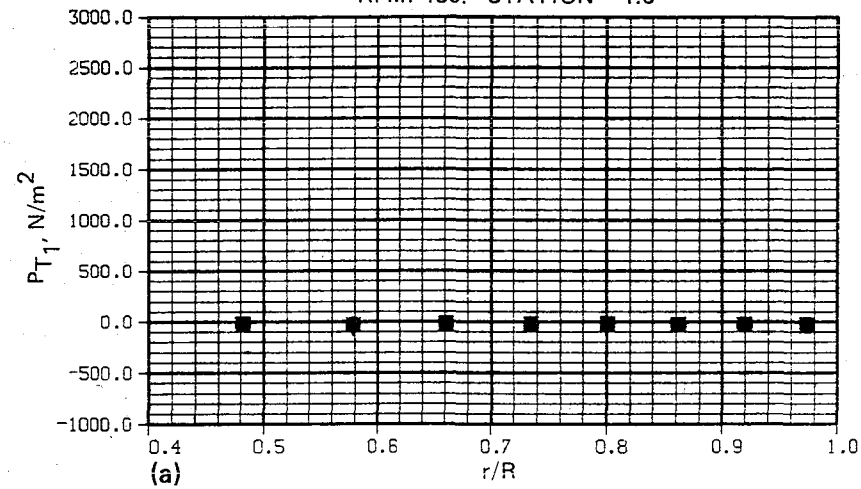
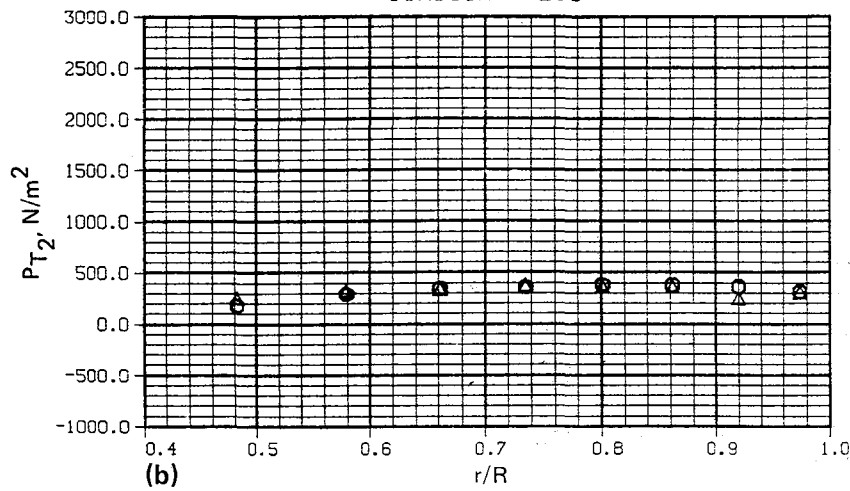


Figure D268.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 401. MASS FLOW: 35.68 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

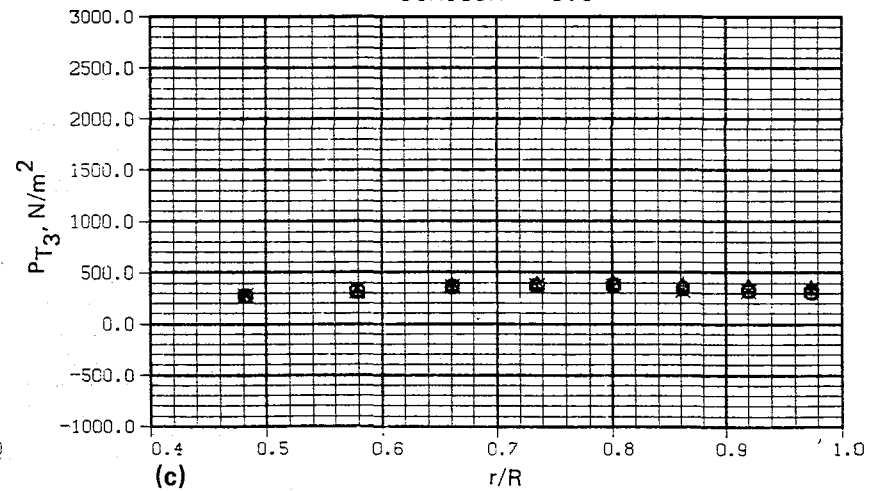


Figure D269.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 402. MASS FLOW: 53.94 slugs/sec

RPM: 720. STATION = 1.0

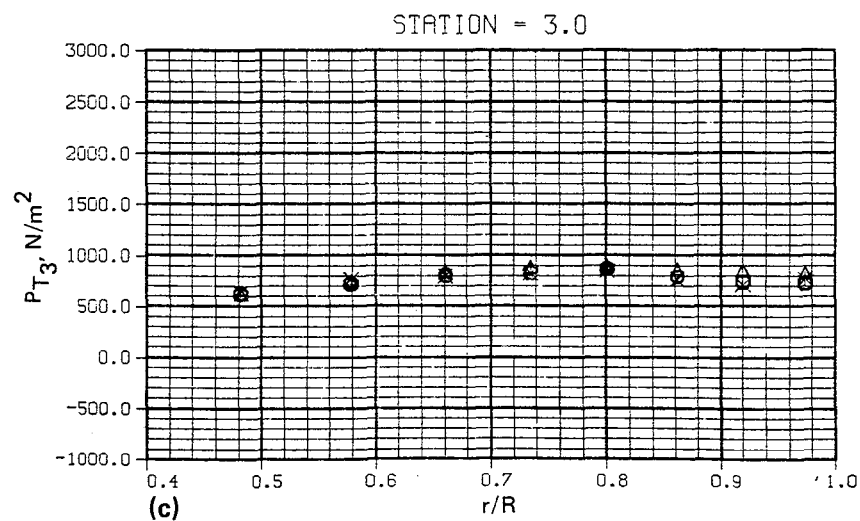
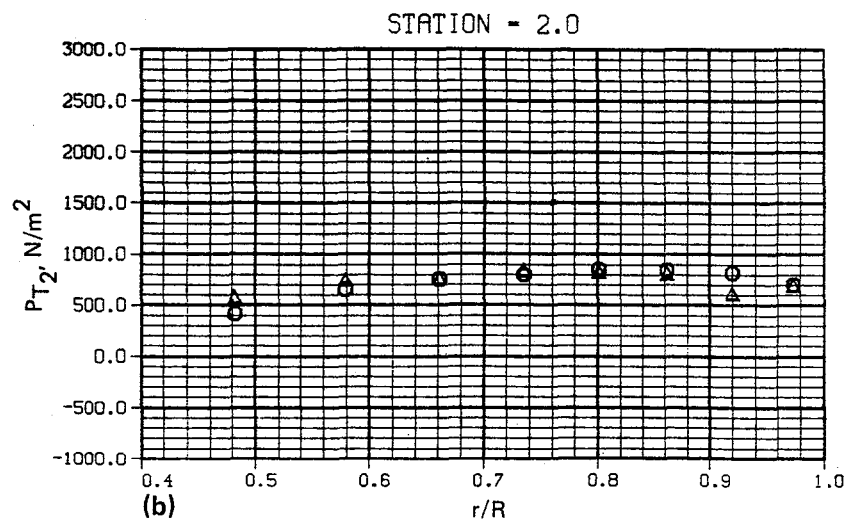
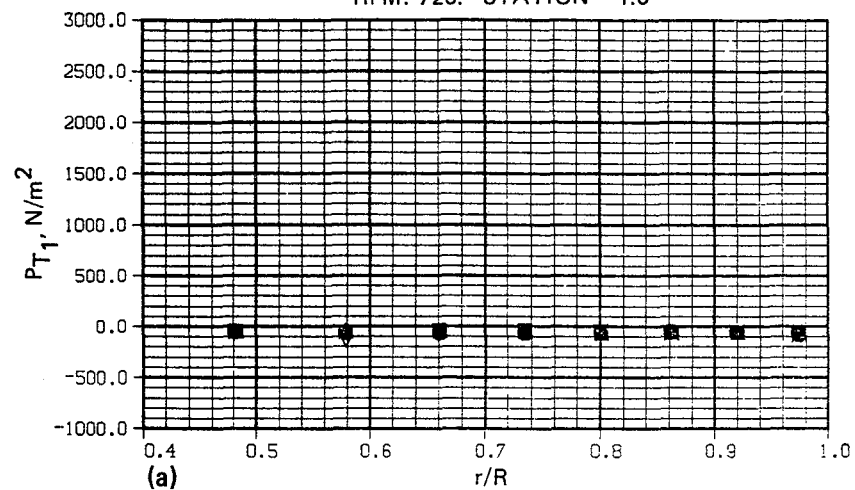


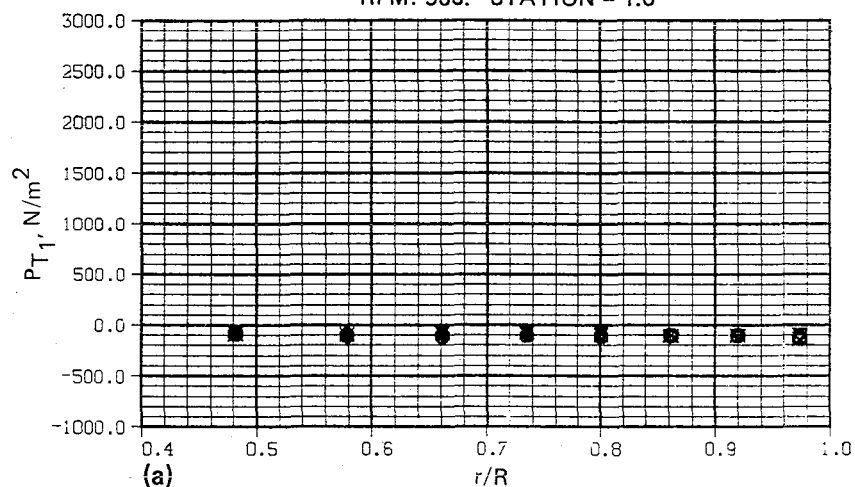
Figure D270.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

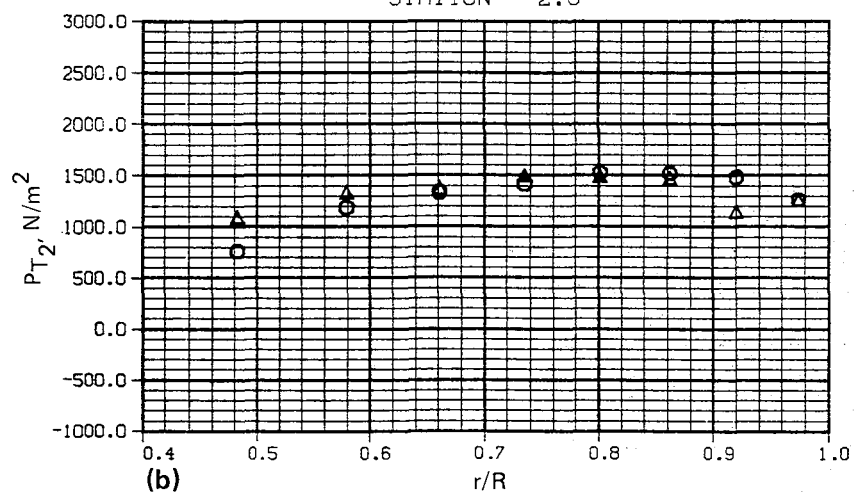
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 403. MASS FLOW: 73.26 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

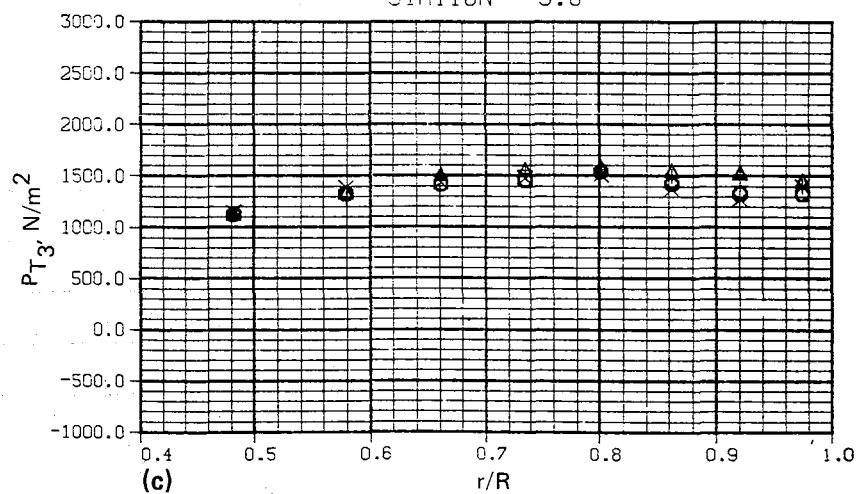


Figure D271.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 404. MASS FLOW: 93.01 slugs/sec

RPM: 1200. STATION = 1.0

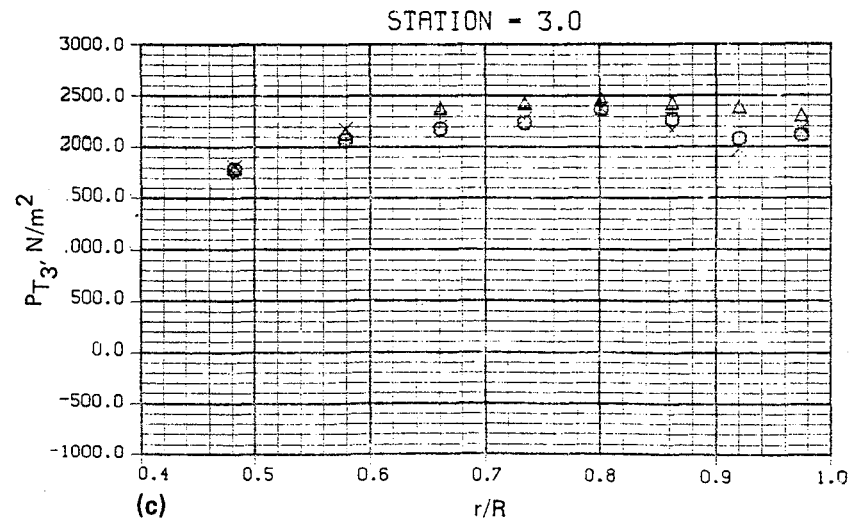
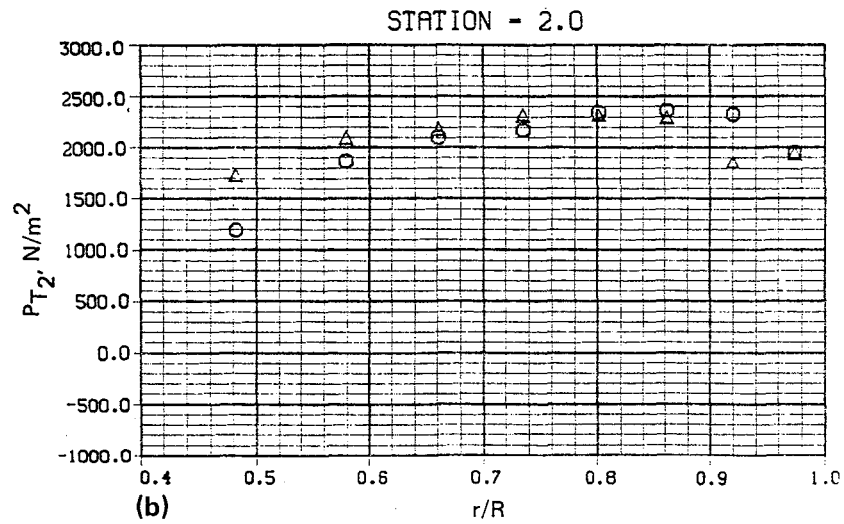
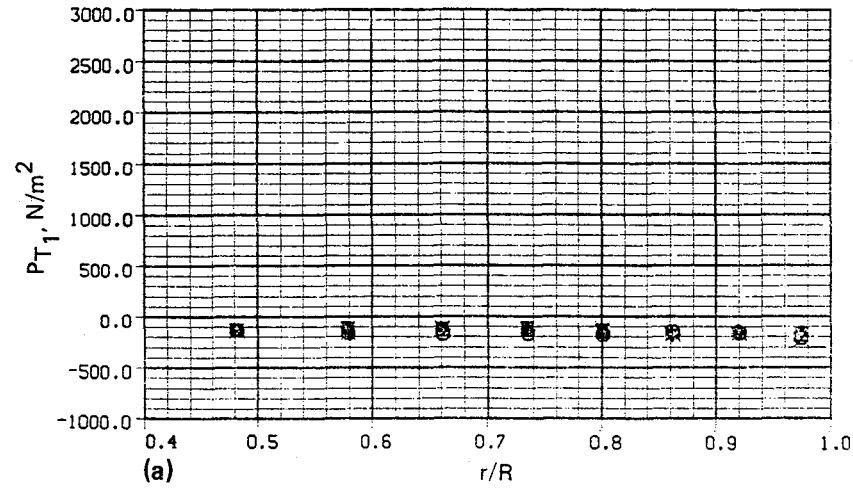


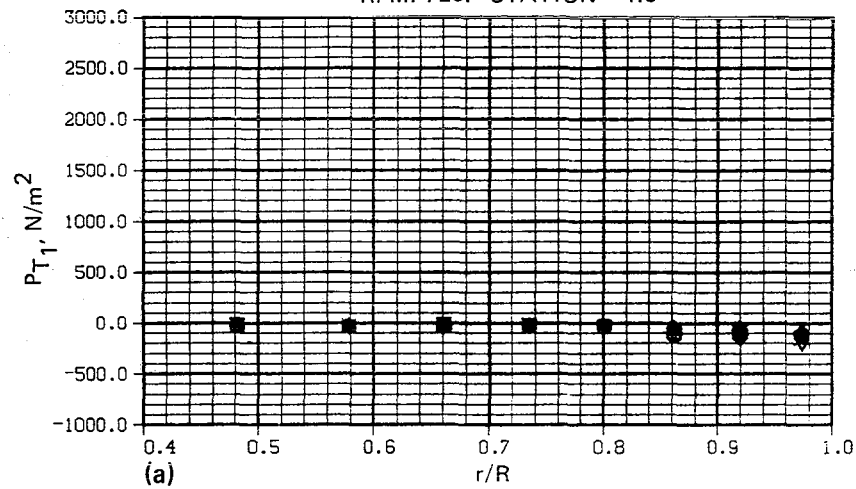
Figure D272.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

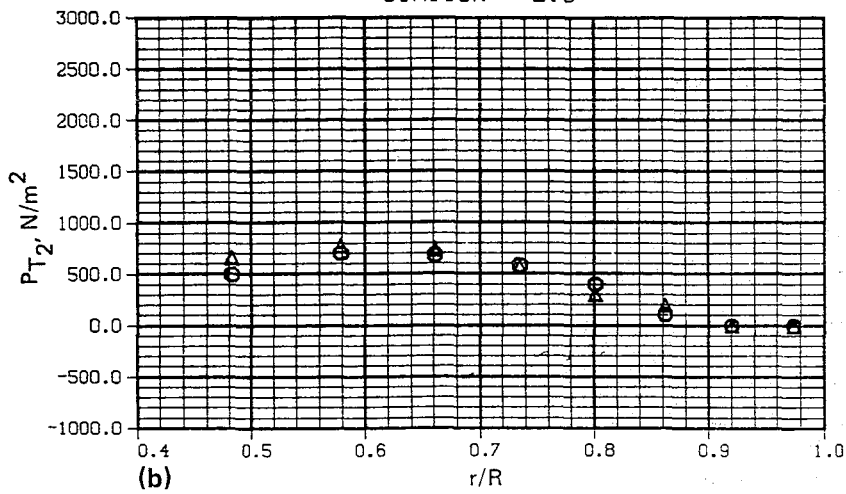
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 406. MASS FLOW: 25.64 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

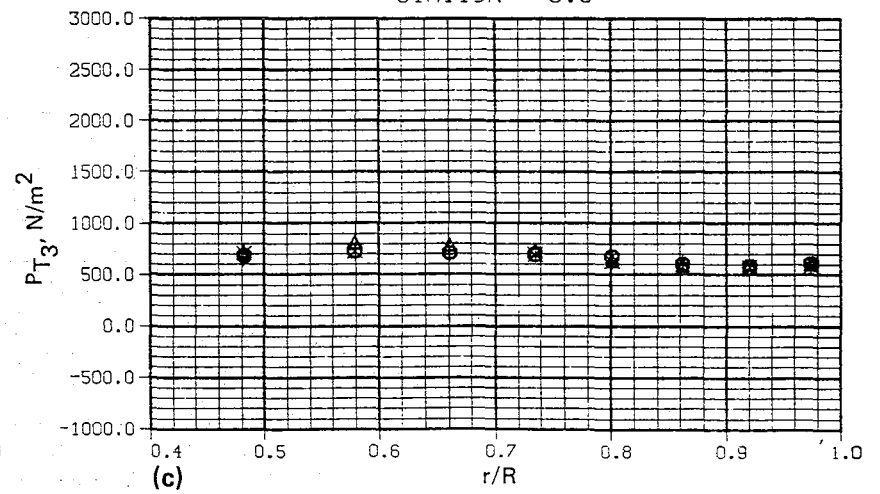


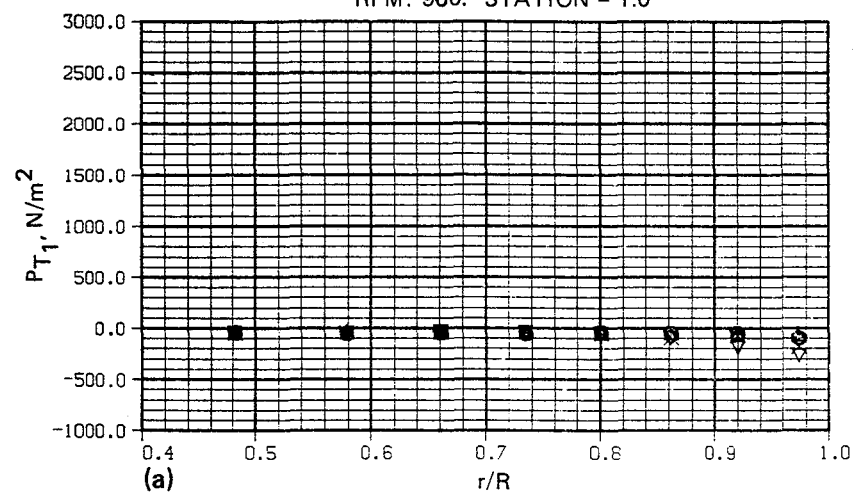
Figure D273.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

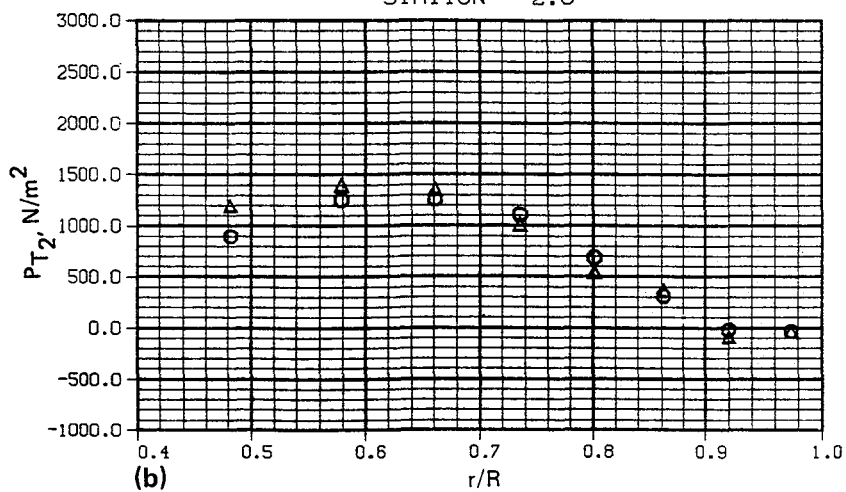
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 407. MASS FLOW: 38.82 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

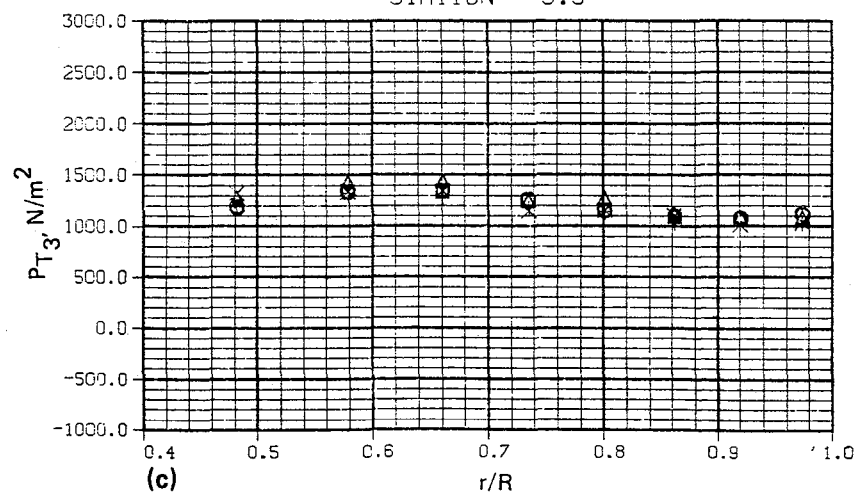


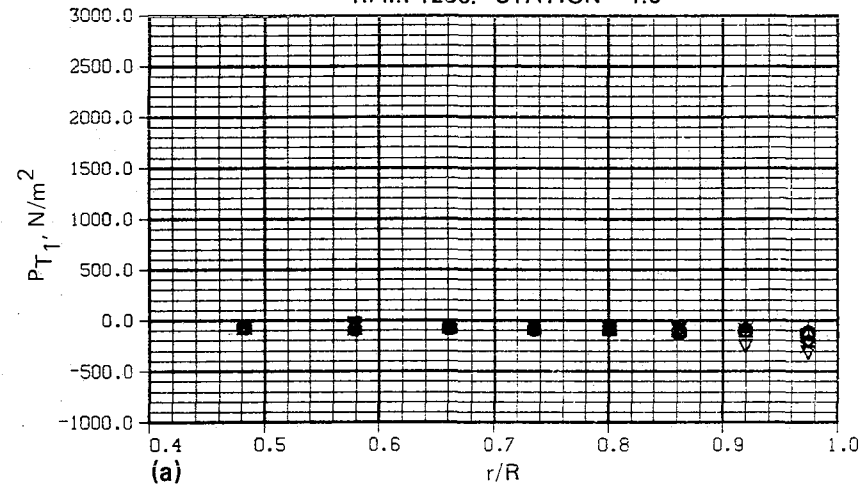
Figure D274.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

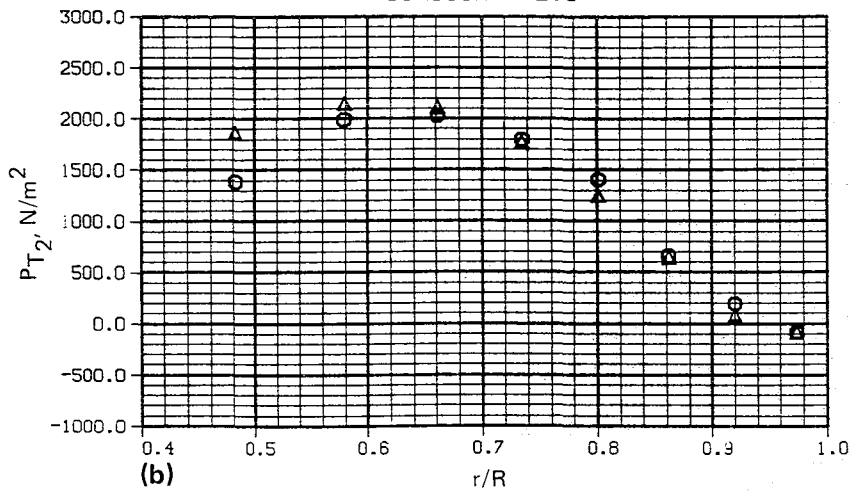
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 408. MASS FLOW: 56.10 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

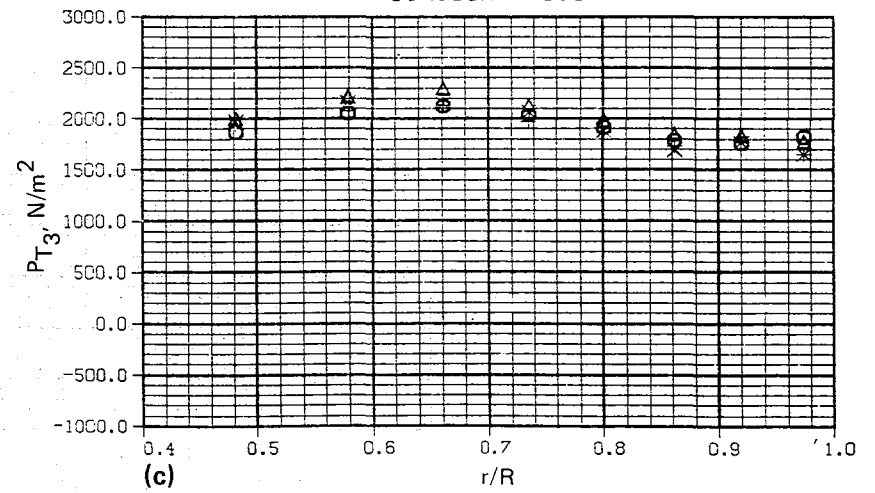


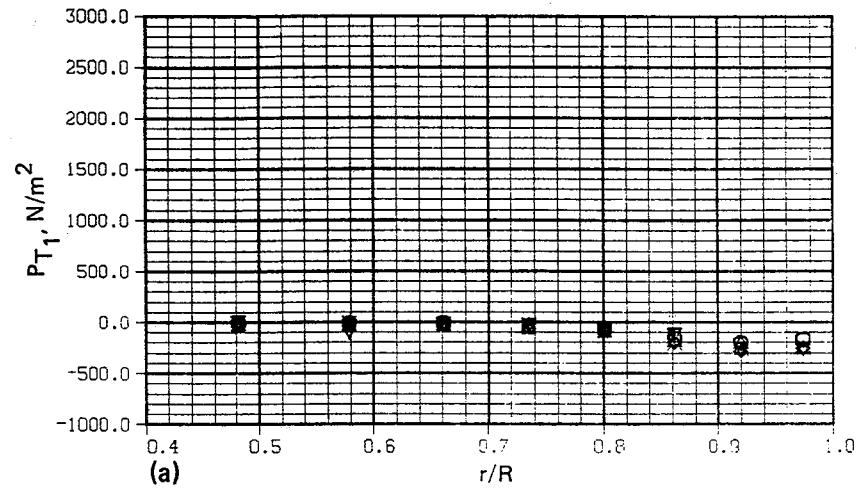
Figure D275.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

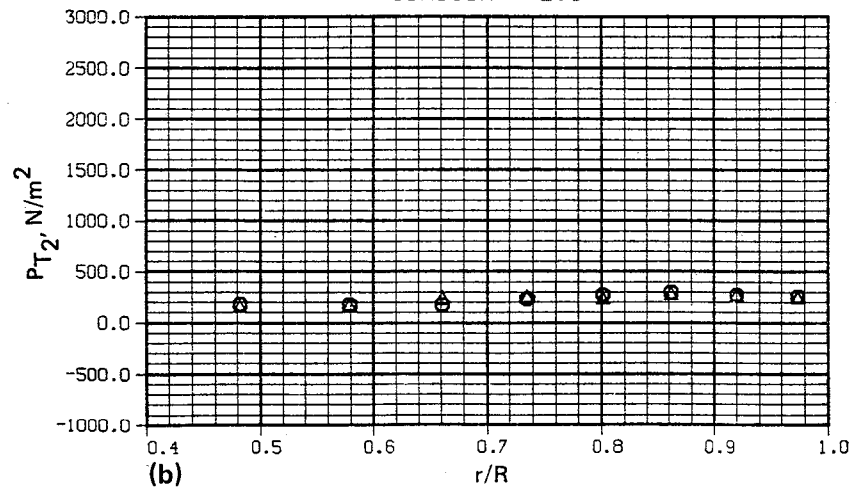
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 409. MASS FLOW: 14.11 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

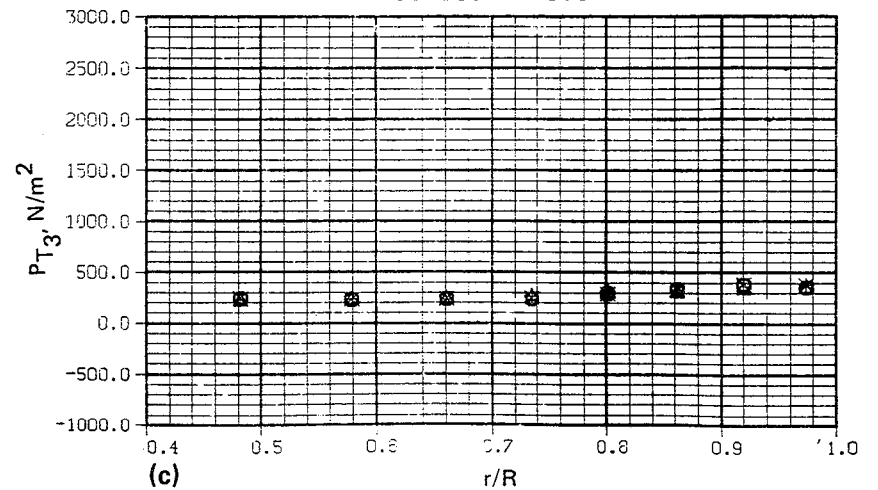


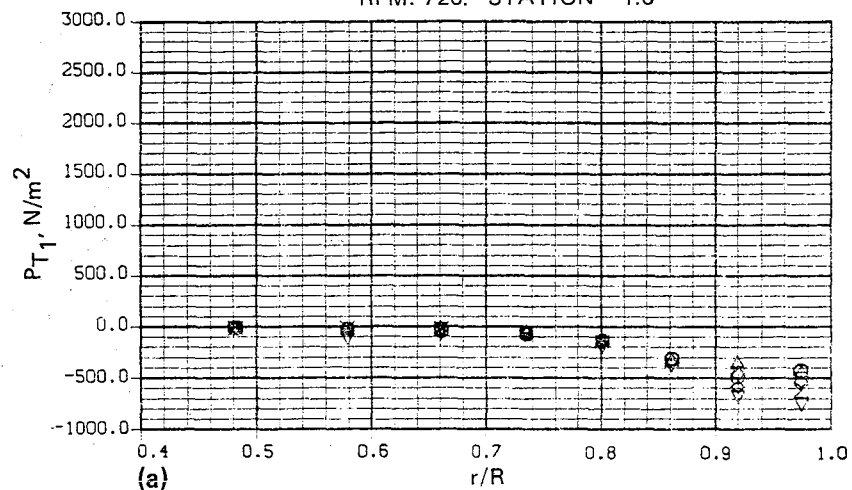
Figure D276.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

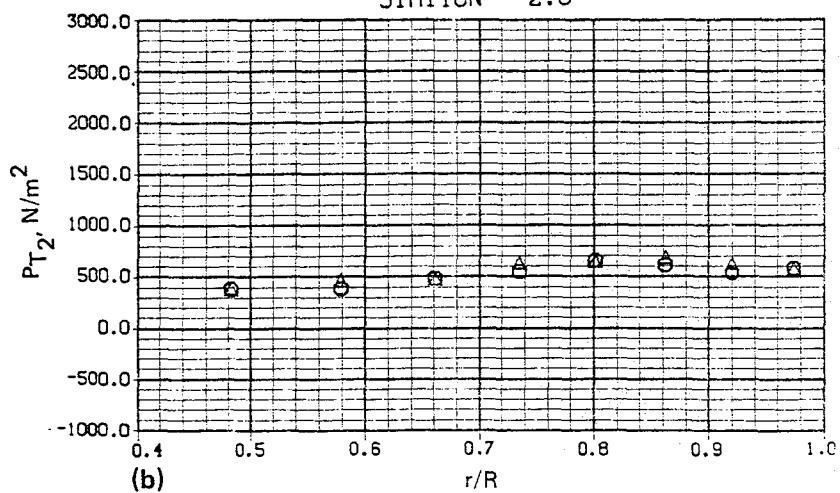
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 410. MASS FLOW: 7.00 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

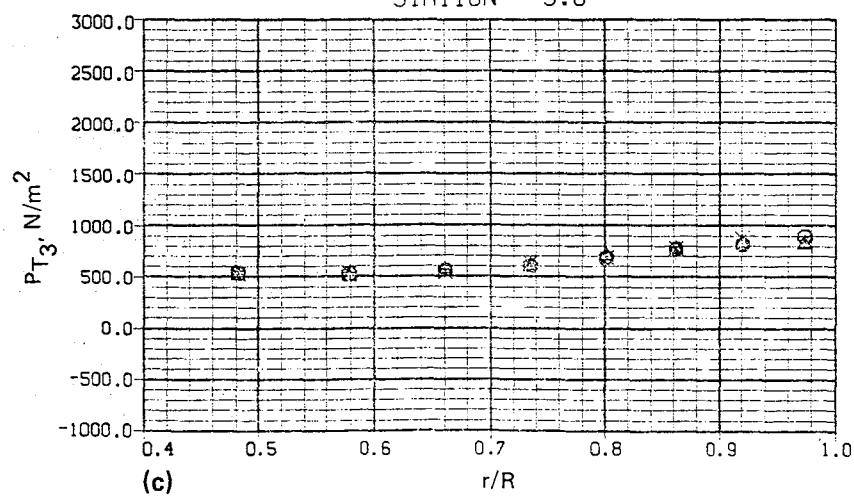


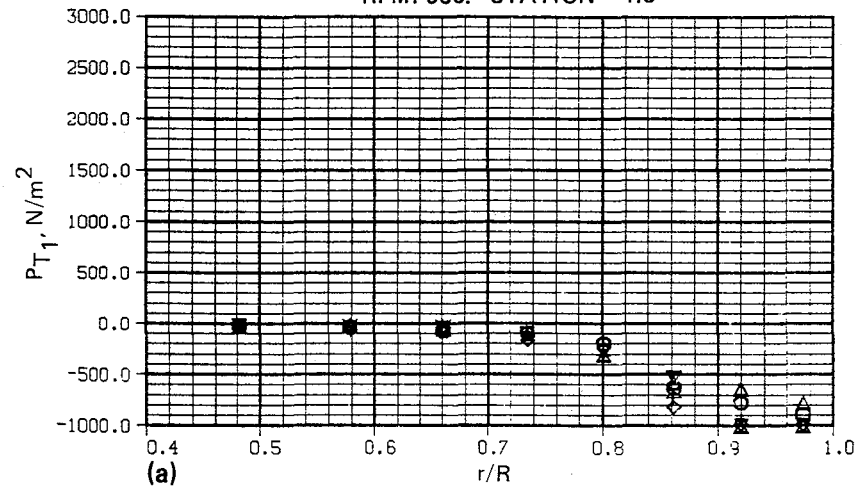
Figure D277.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

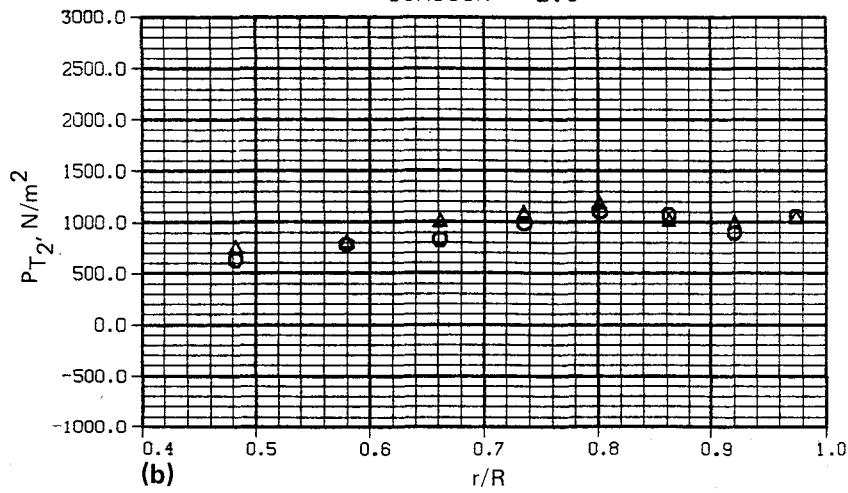
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 411. MASS FLOW: 9.58 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

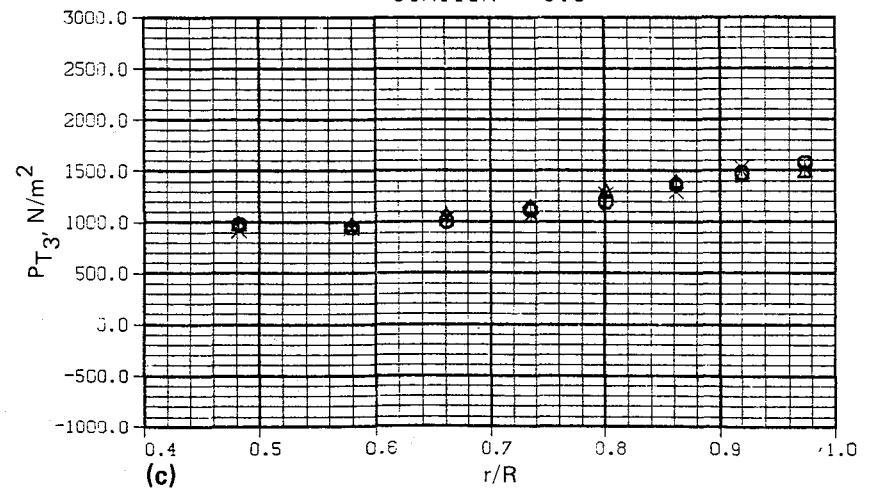
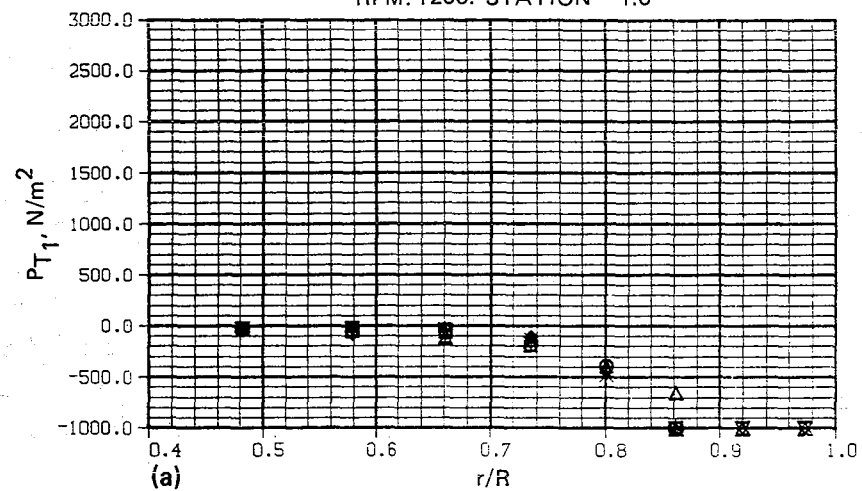
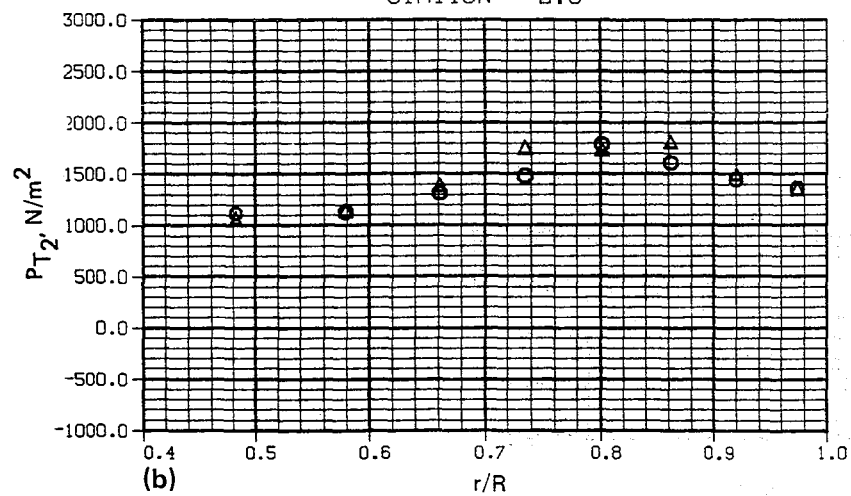


Figure D278.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 412. MASS FLOW: 12.95 slugs/sec
 RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

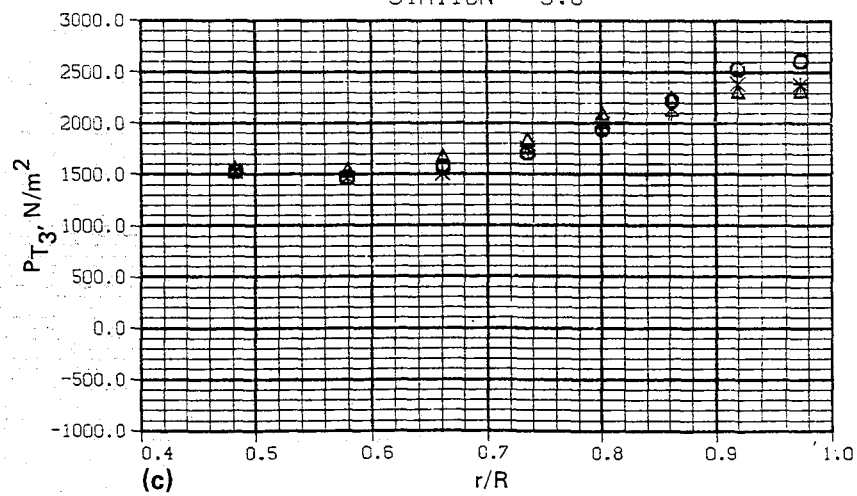


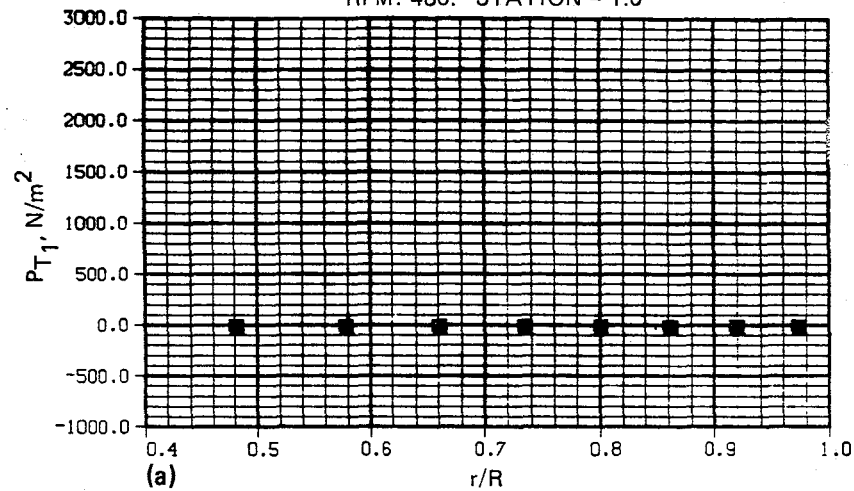
Figure D279.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

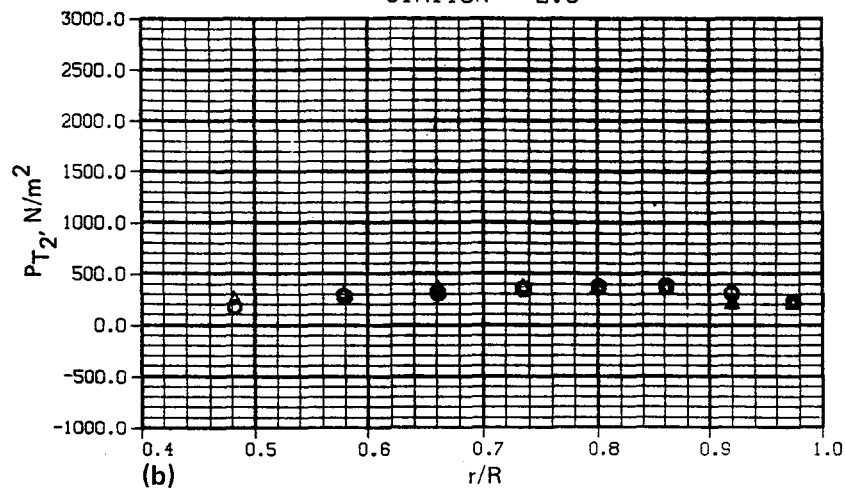
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 413. MASS FLOW: 30.80 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

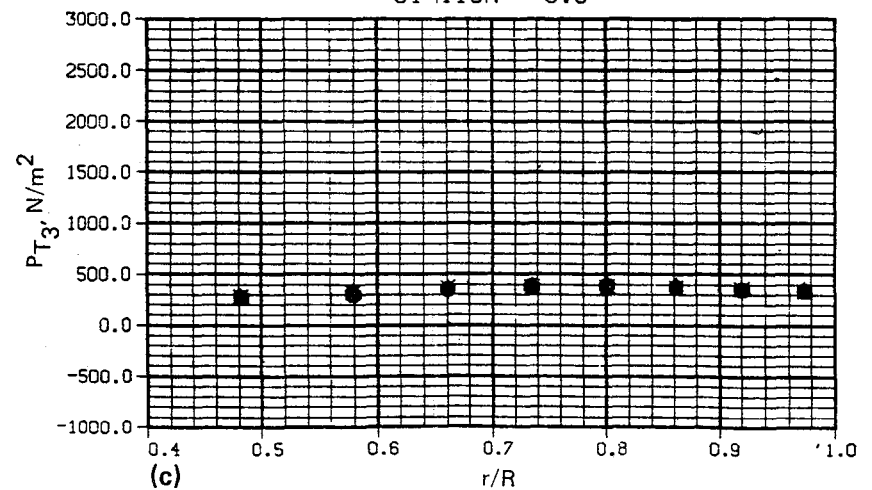
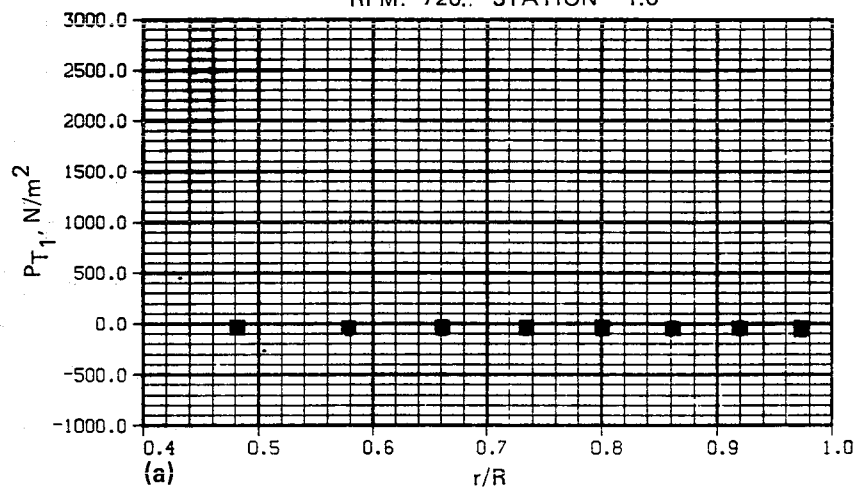
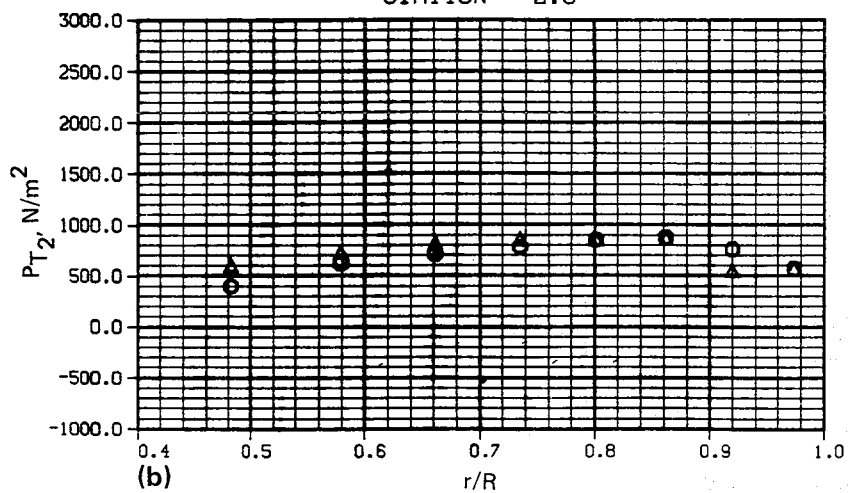


Figure D280.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 414. MASS FLOW: 47.07 slugs/sec
 RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

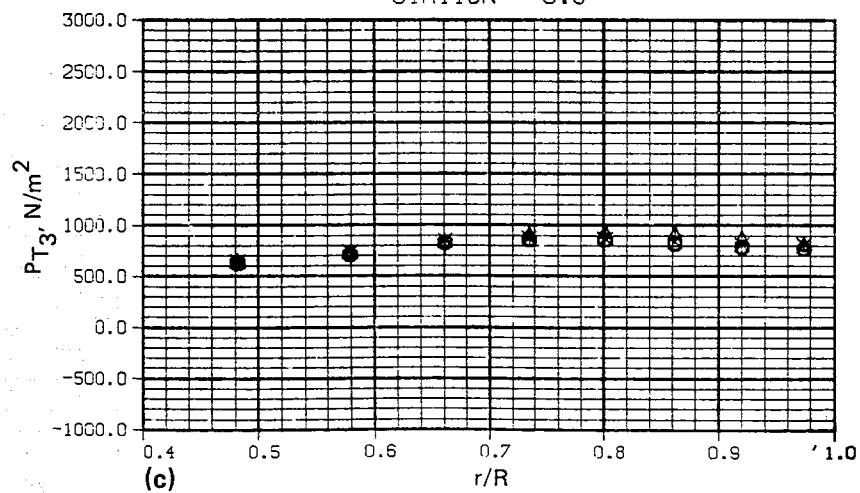


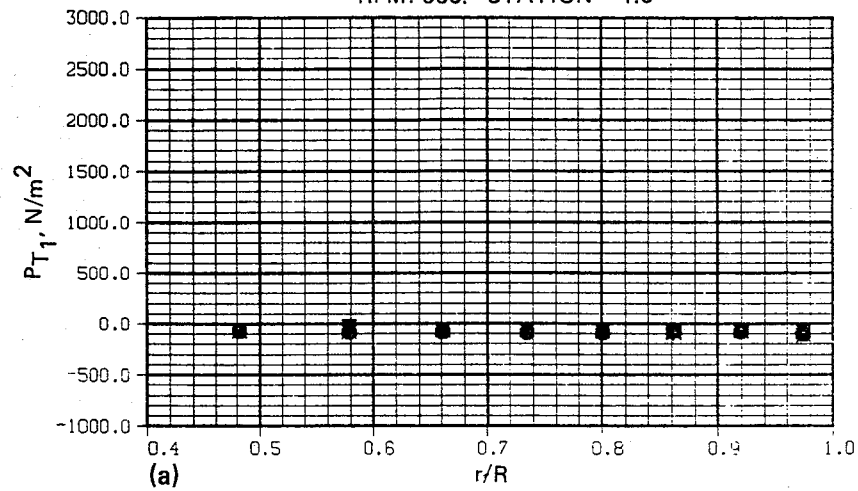
Figure D281.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

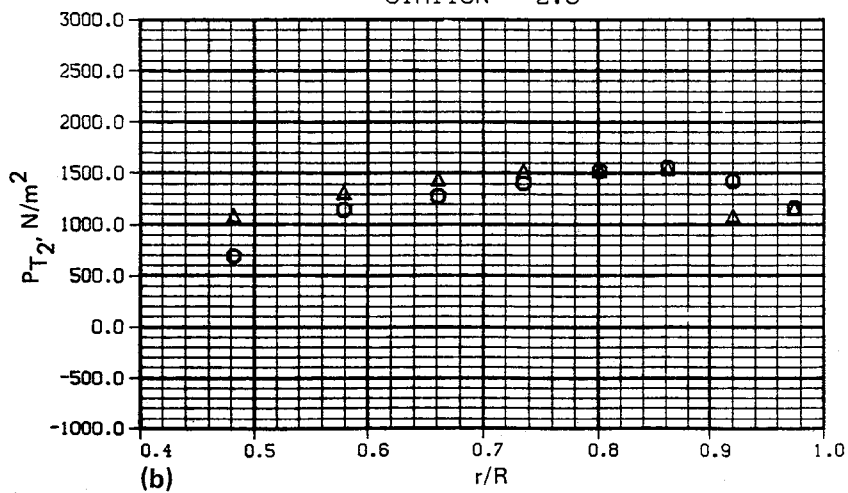
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 415. MASS FLOW: 64.11 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

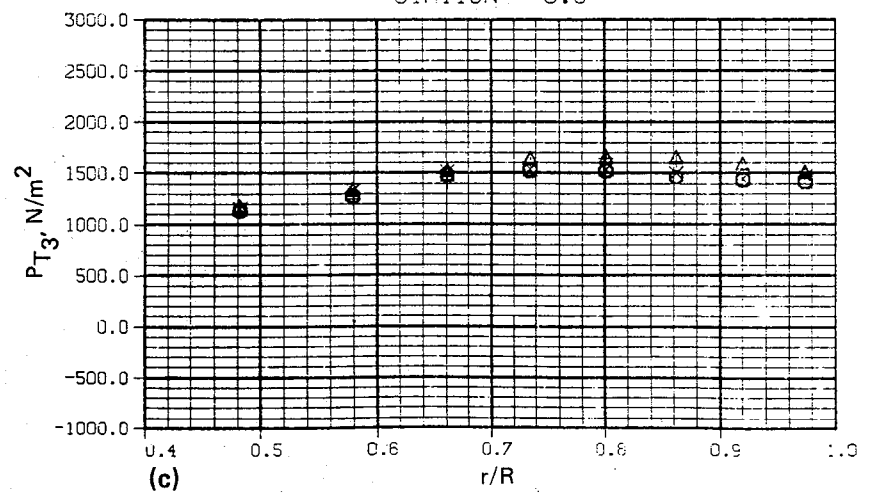


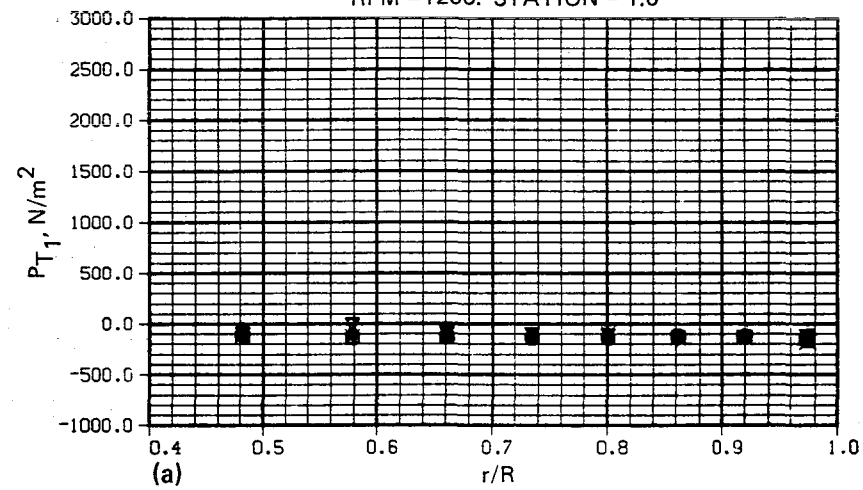
Figure D282.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

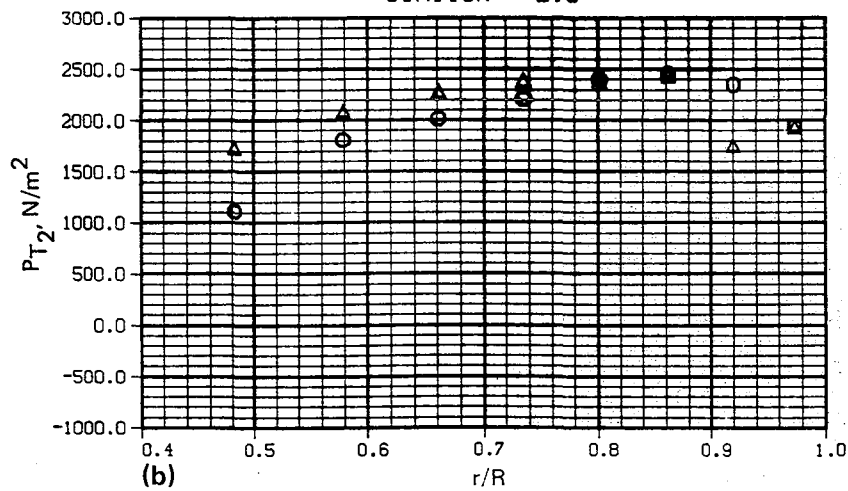
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 416. MASS FLOW: 81.90 slugs/sec

RPM = 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

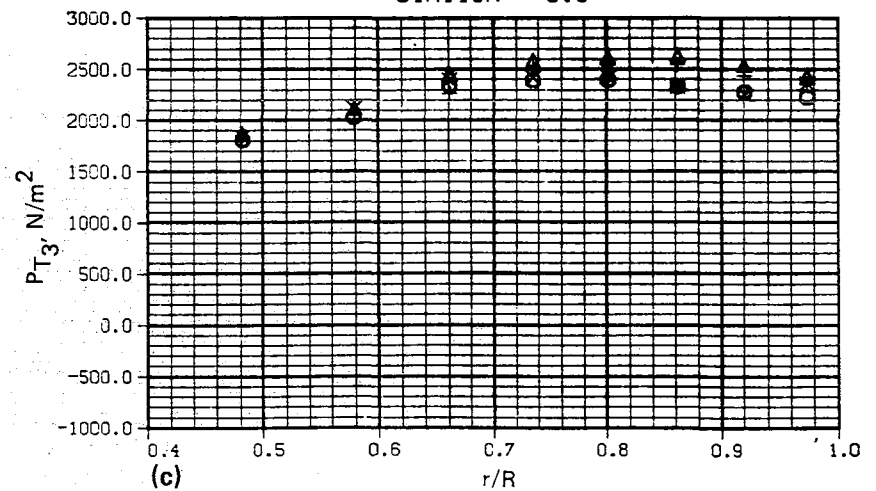


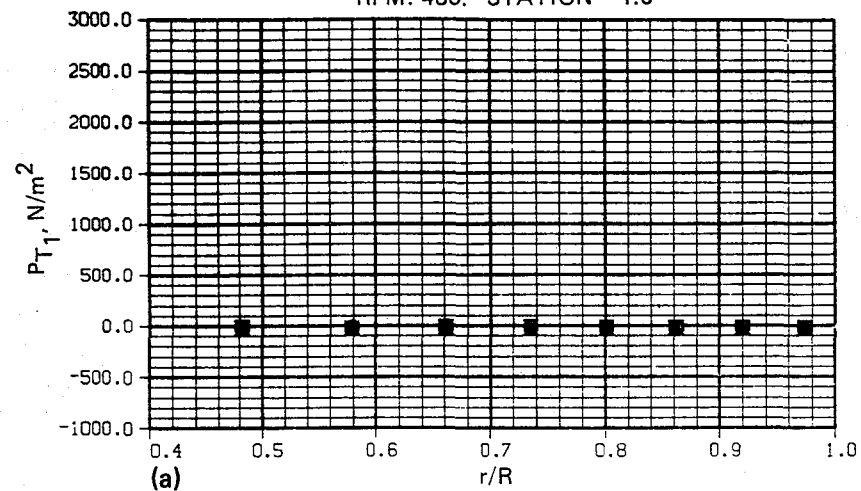
Figure D283.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

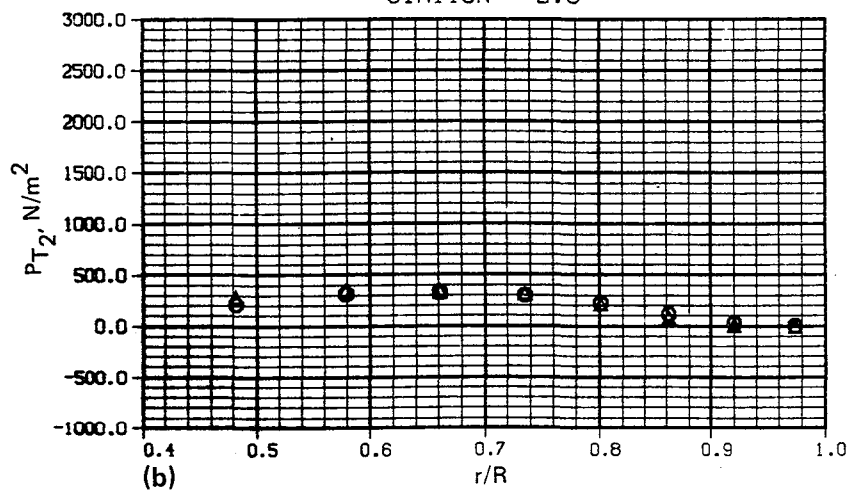
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 417. MASS FLOW: 22.19 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

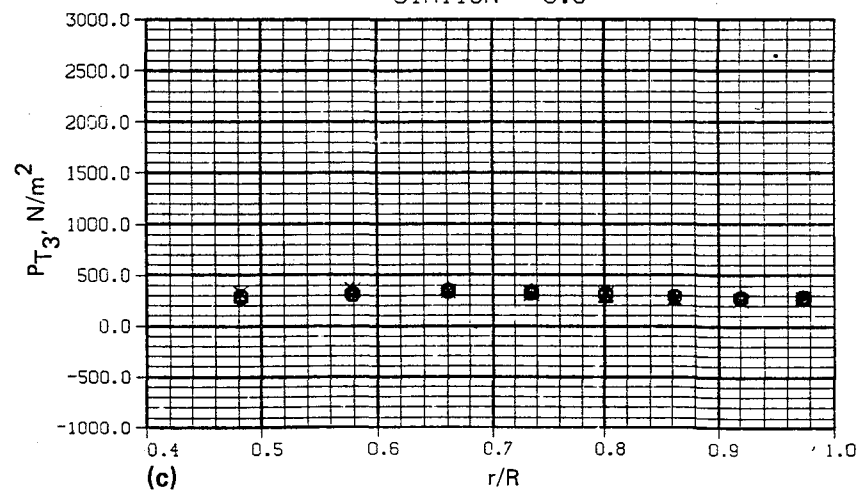


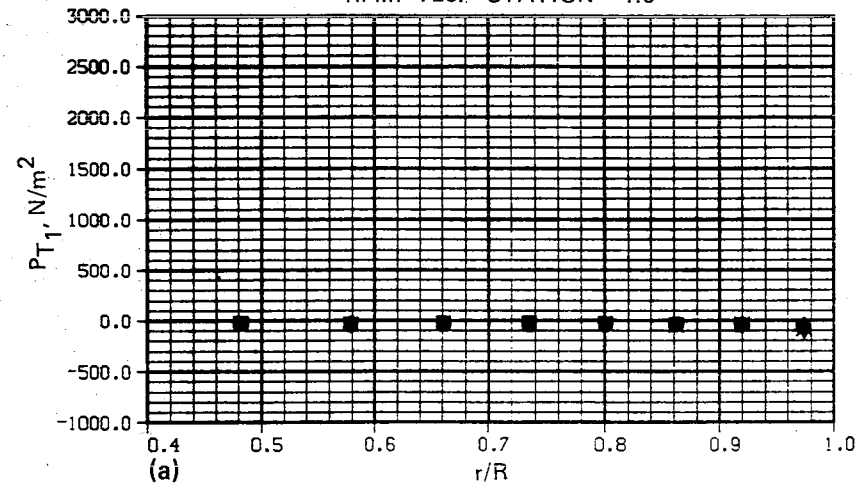
Figure D284.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

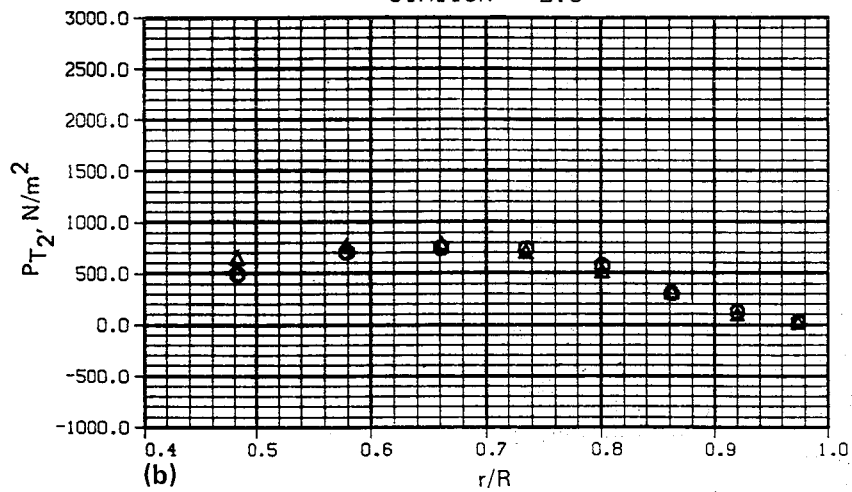
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 418. MASS FLOW: 36.10 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

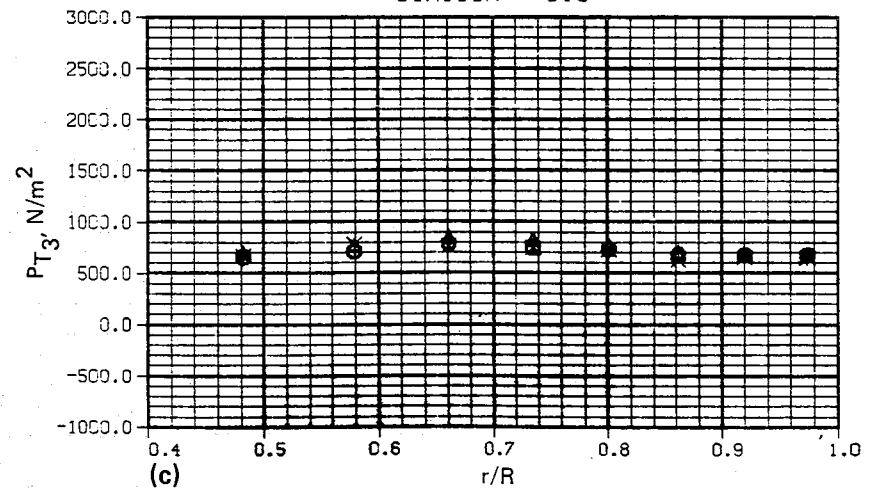


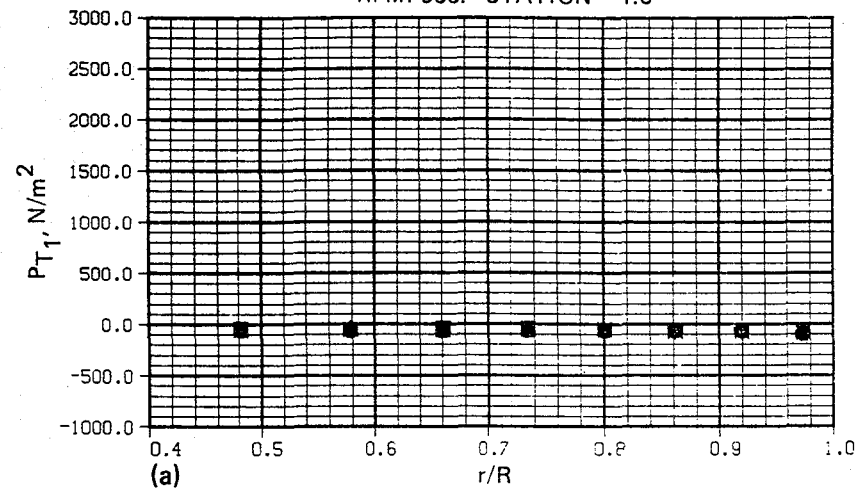
Figure D285.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

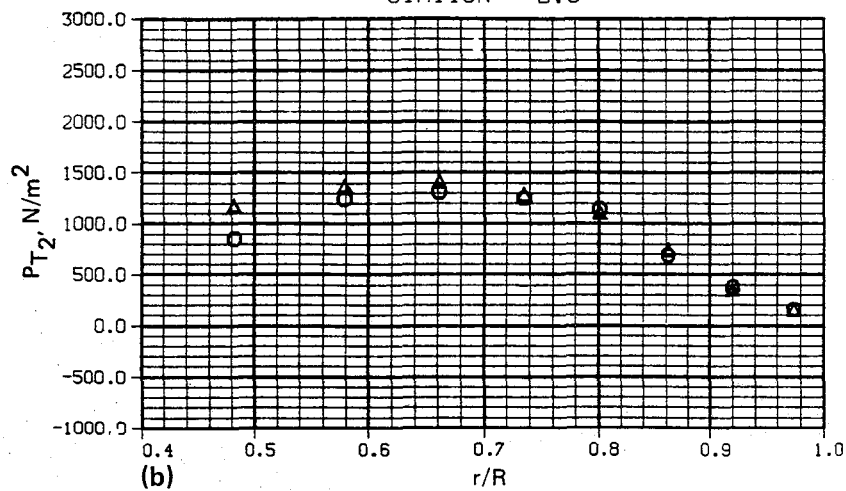
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 419. MASS FLOW: 50.69 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

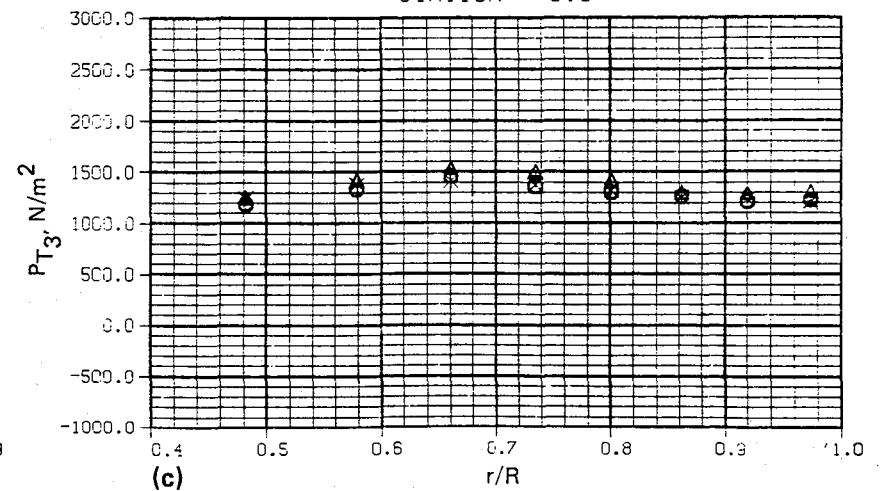


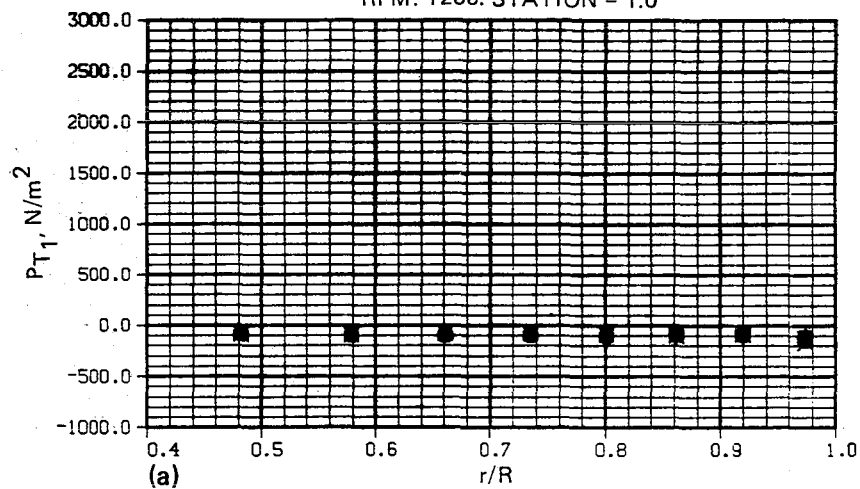
Figure D286.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

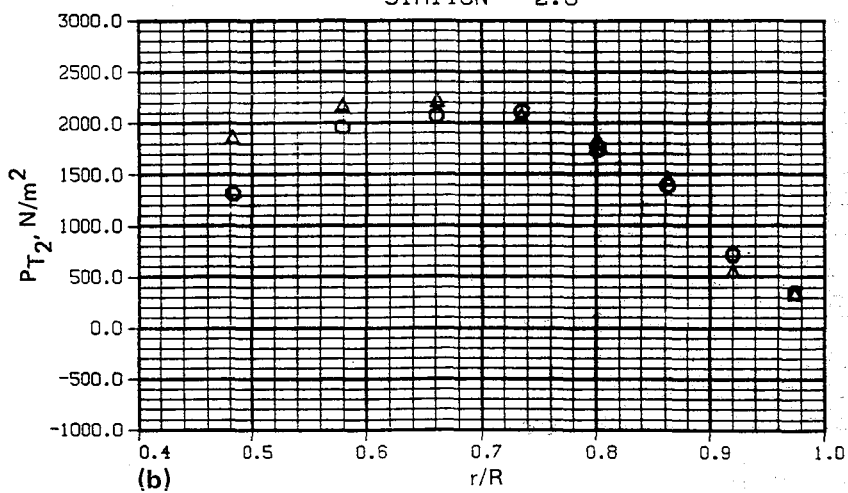
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 420. MASS FLOW: 65.97 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

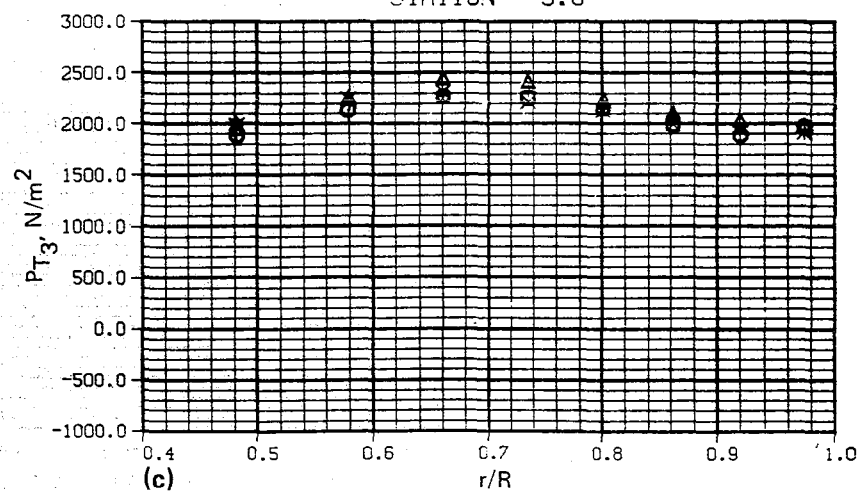


Figure D287.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 421. MASS FLOW: 8.95 slugs/sec

RPM: 480. STATION = 1.0

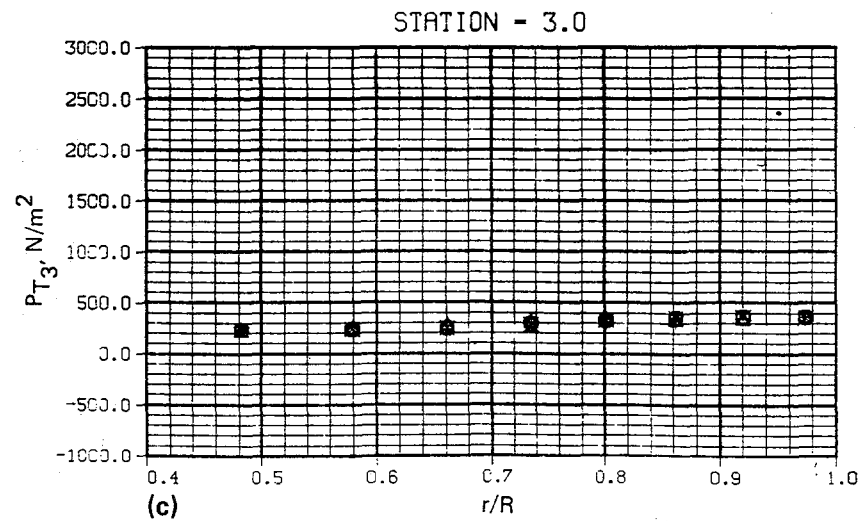
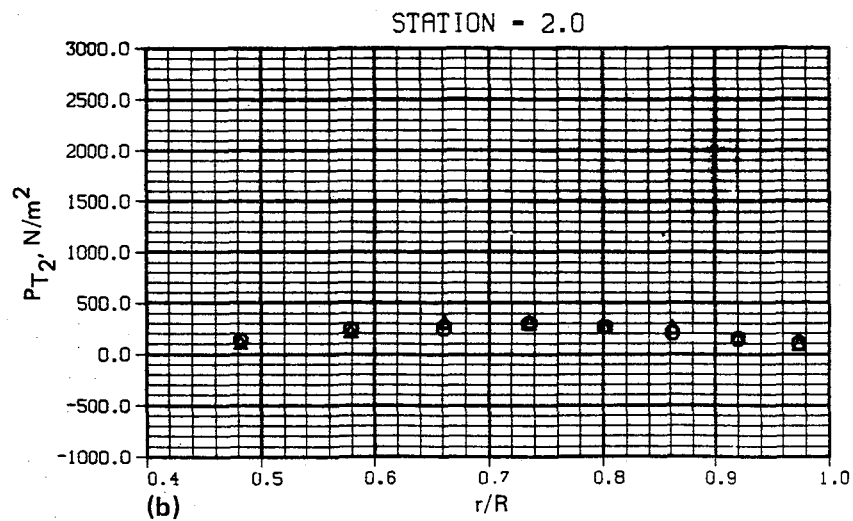
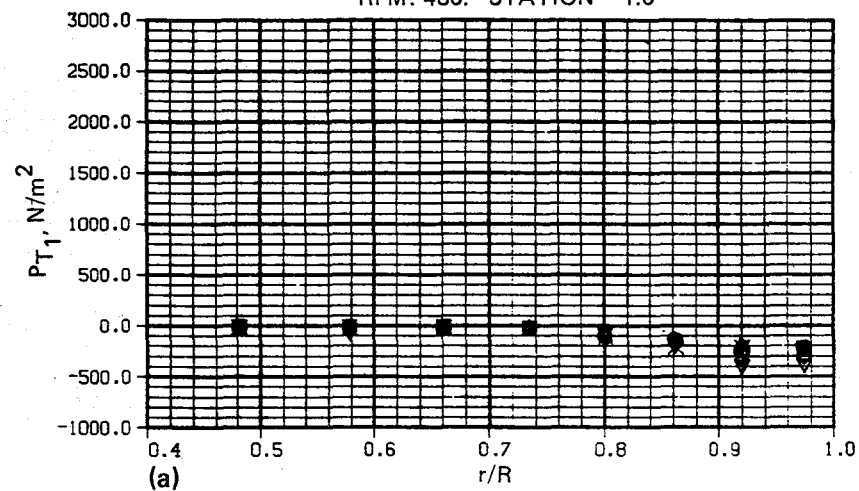


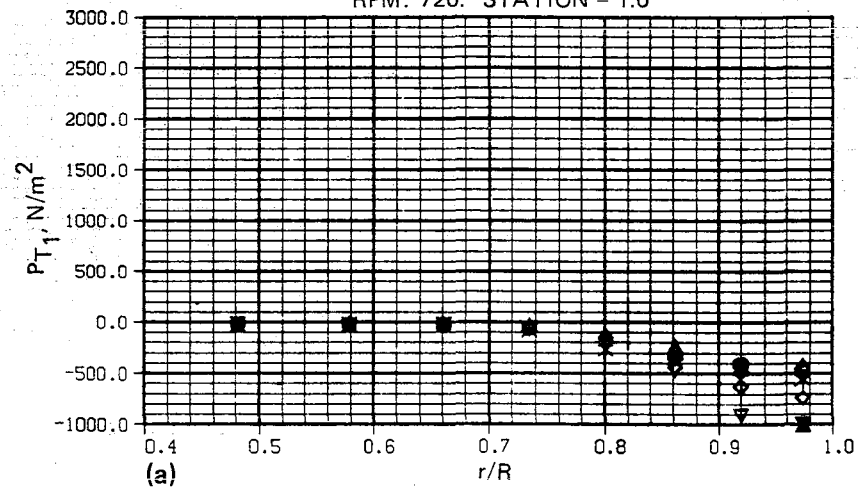
Figure D288.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

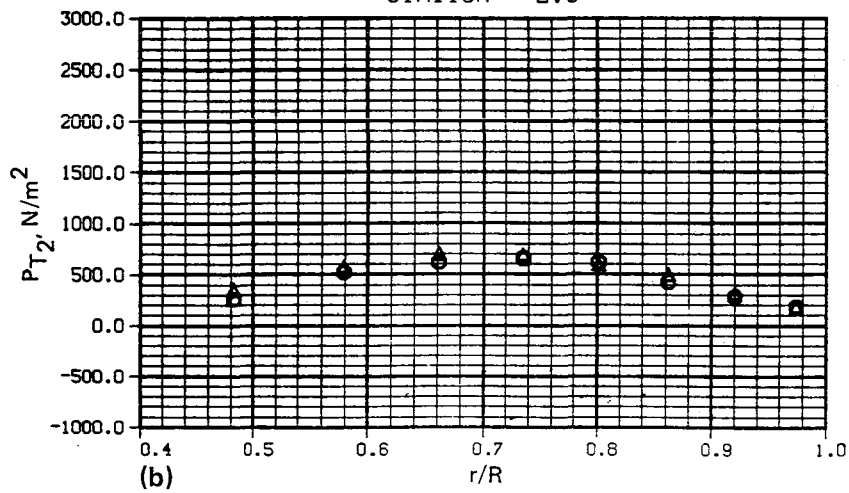
BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 422. MASS FLOW: 13.65 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

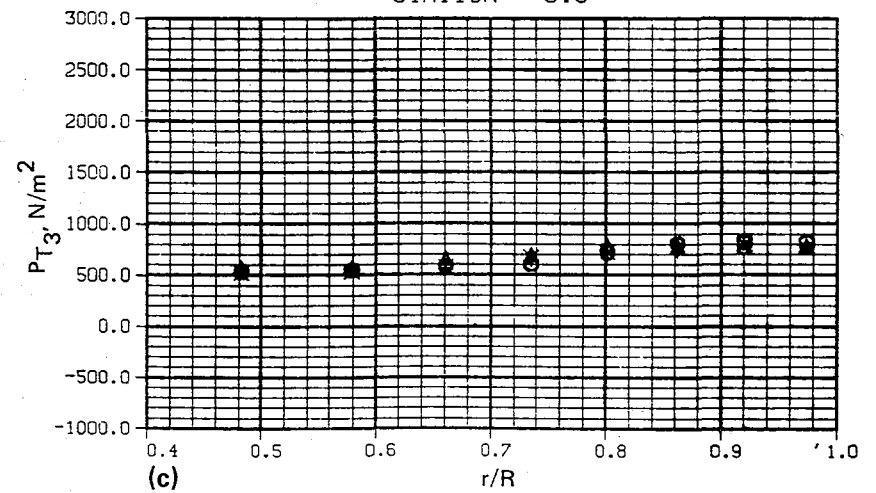


Figure D289.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 29.2

RUN NO: 423. MASS FLOW: 18.78 slugs/sec

RPM: 960. STATION = 1.0

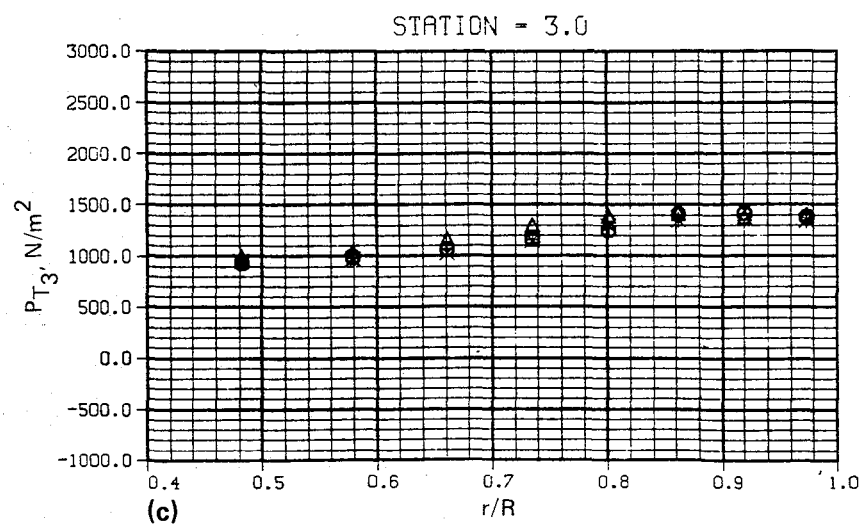
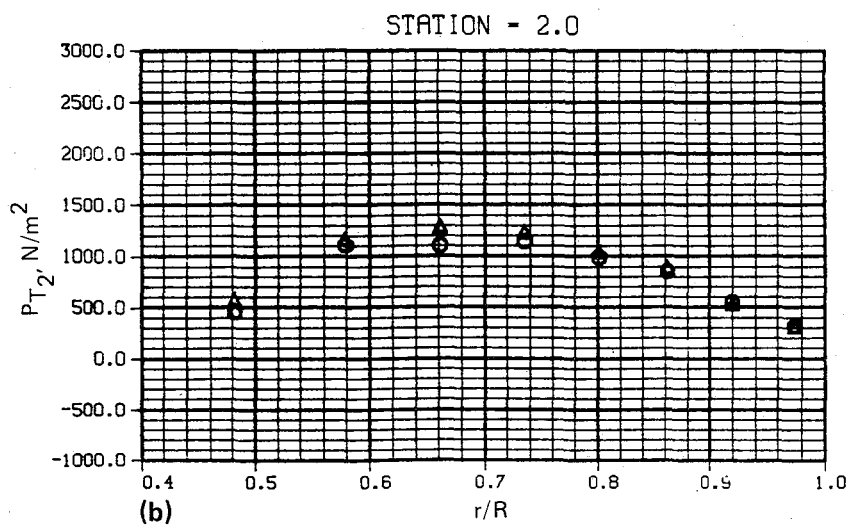
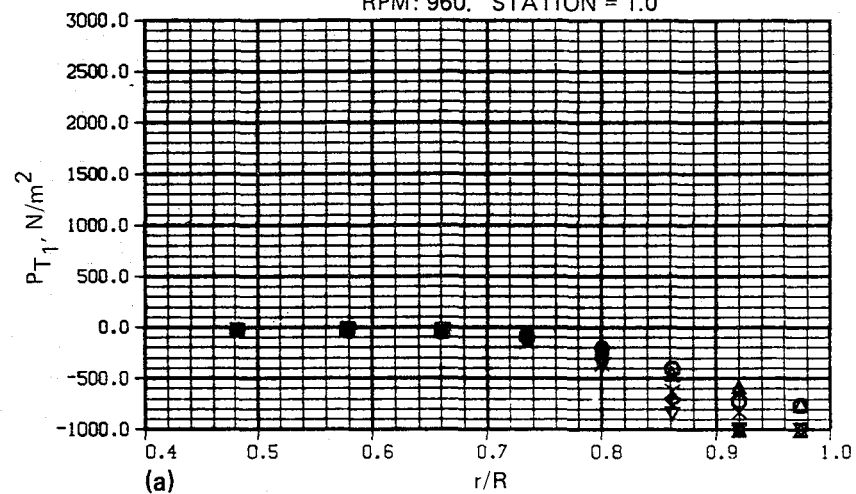
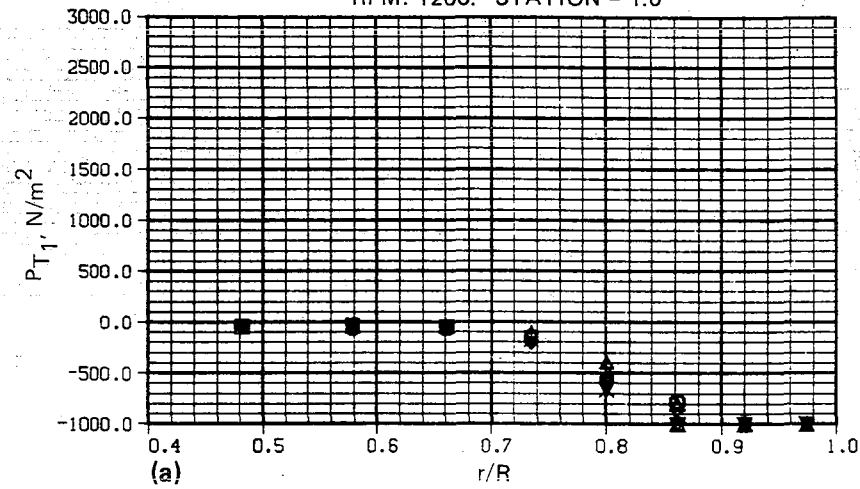
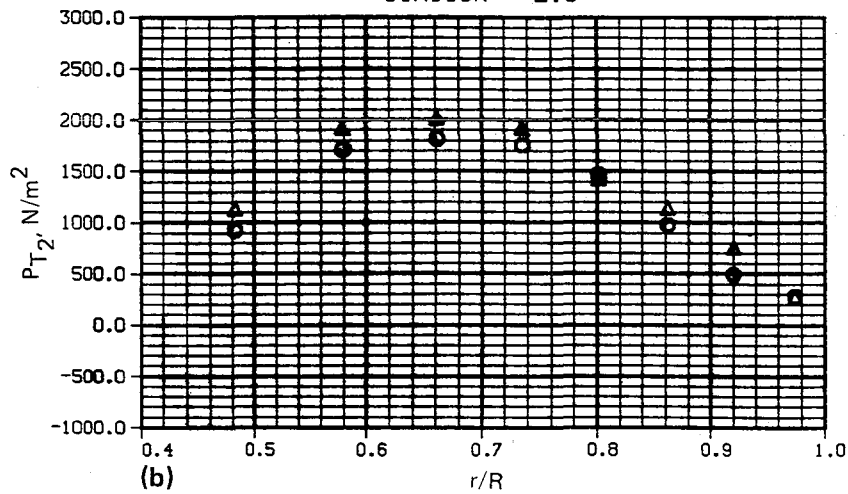


Figure D290.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 29.2
 RUN NO: 424. MASS FLOW: 22.42 slugs/sec
 RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

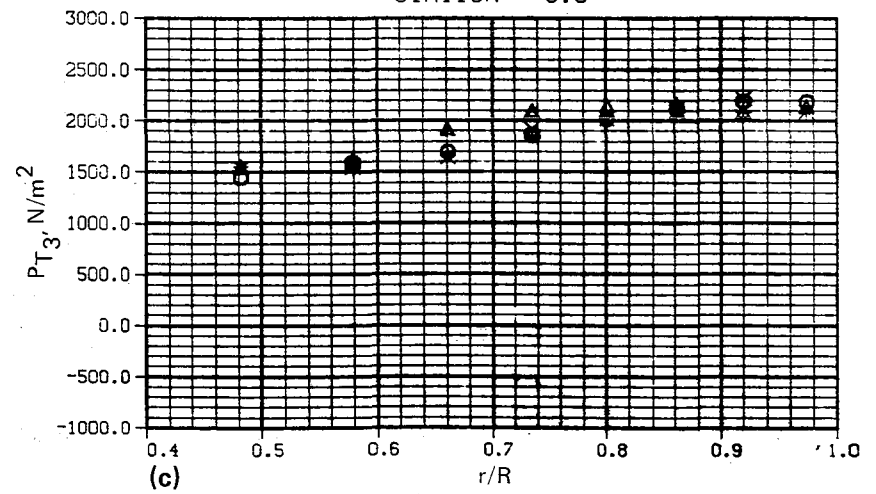


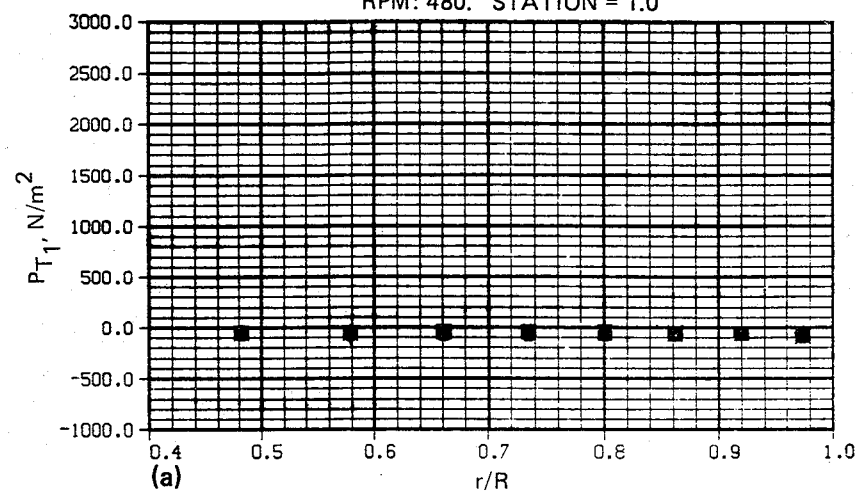
Figure D291.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

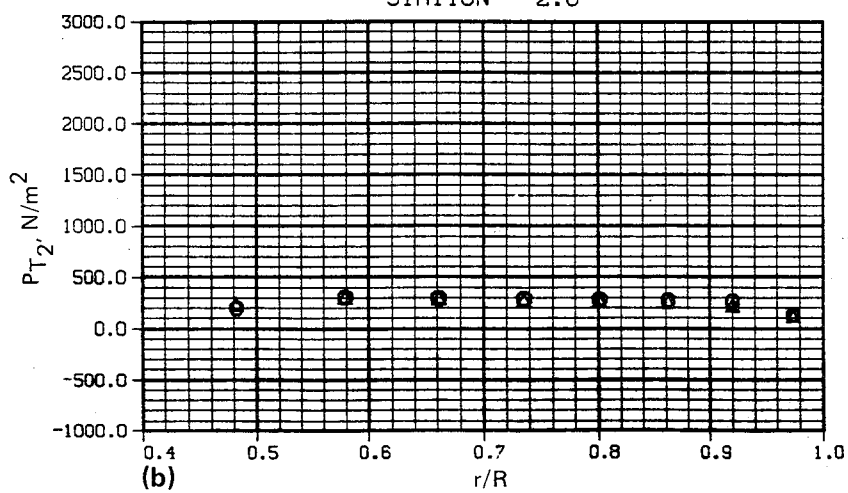
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 429. MASS FLOW: 55.80 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

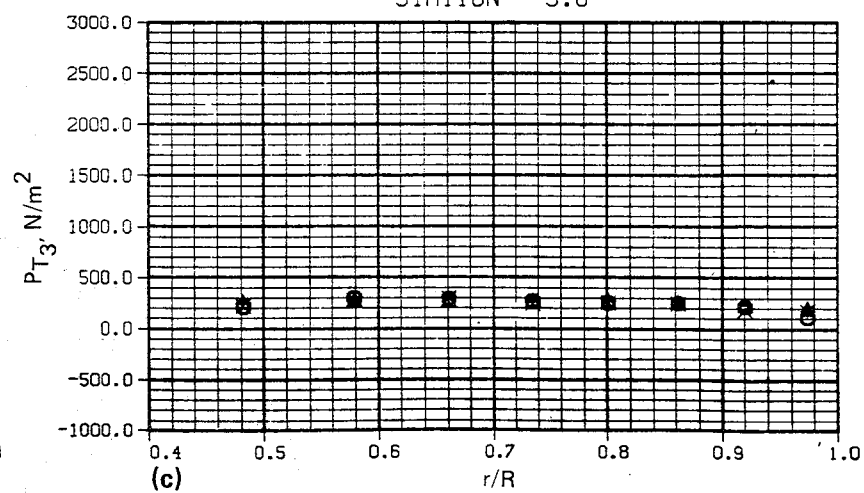


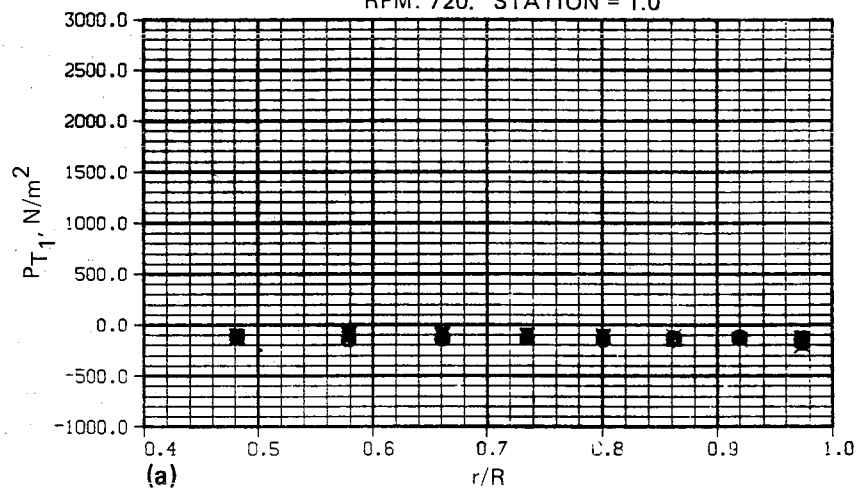
Figure D292.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

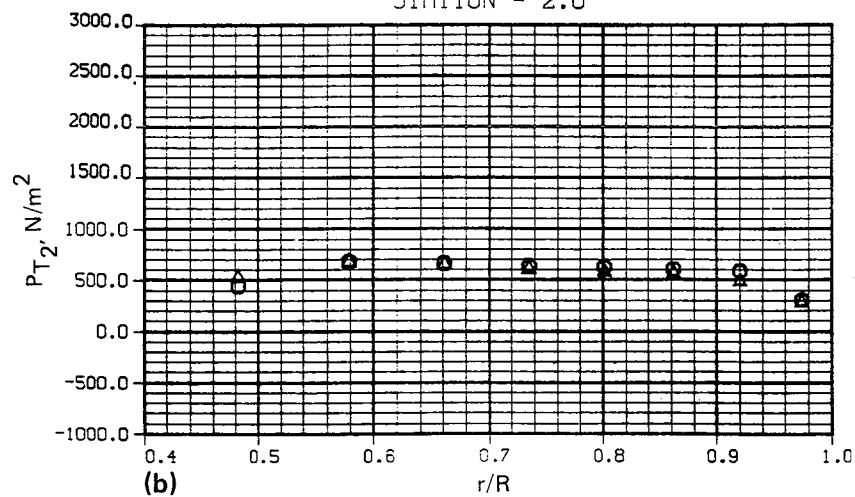
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 430. MASS FLOW: 84.94 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

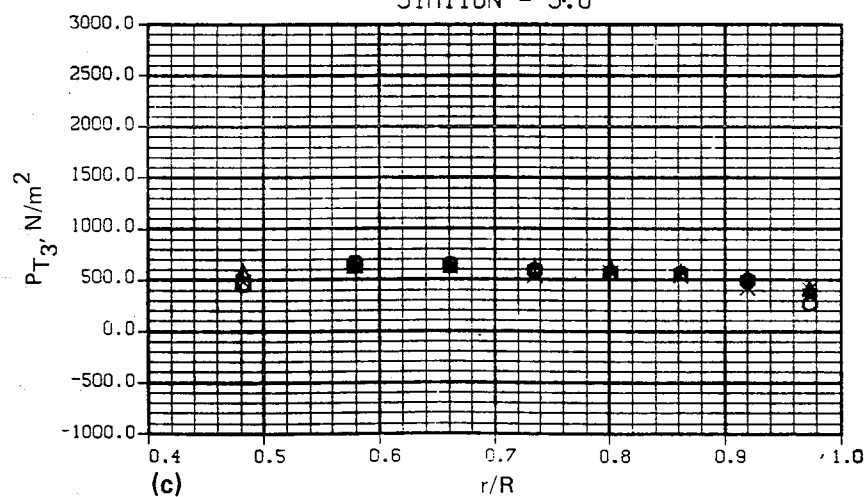


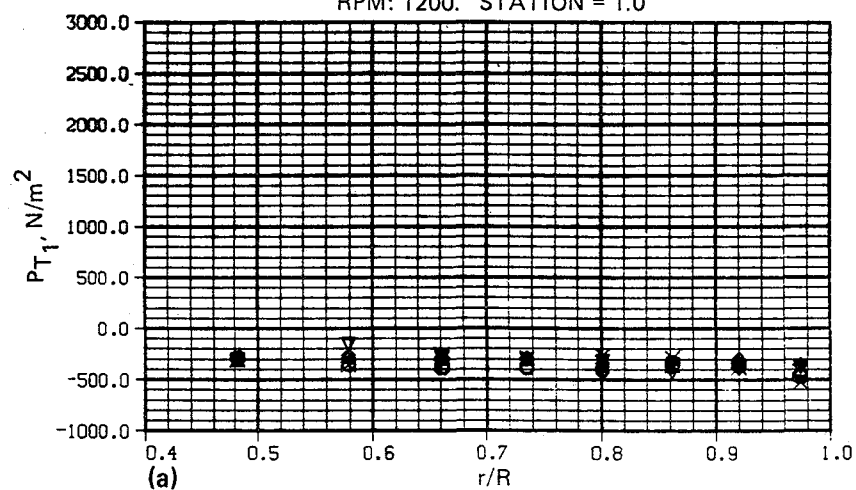
Figure D293.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

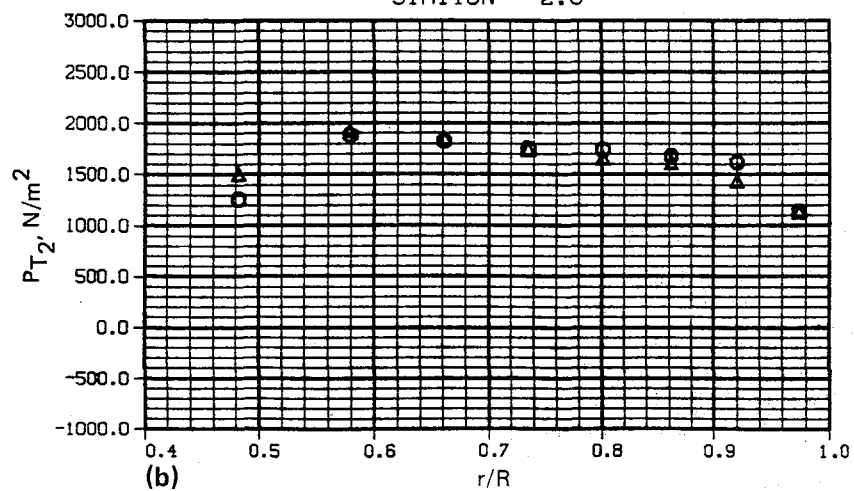
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 432. MASS FLOW: 142.86 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

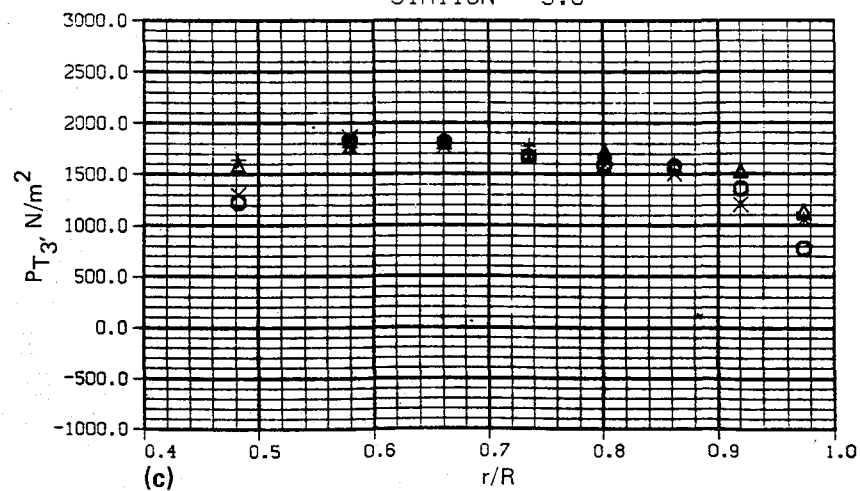


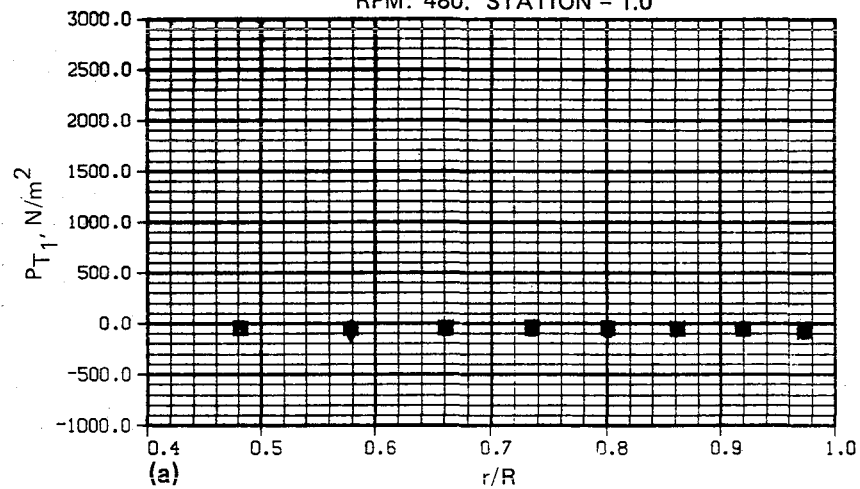
Figure D294.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

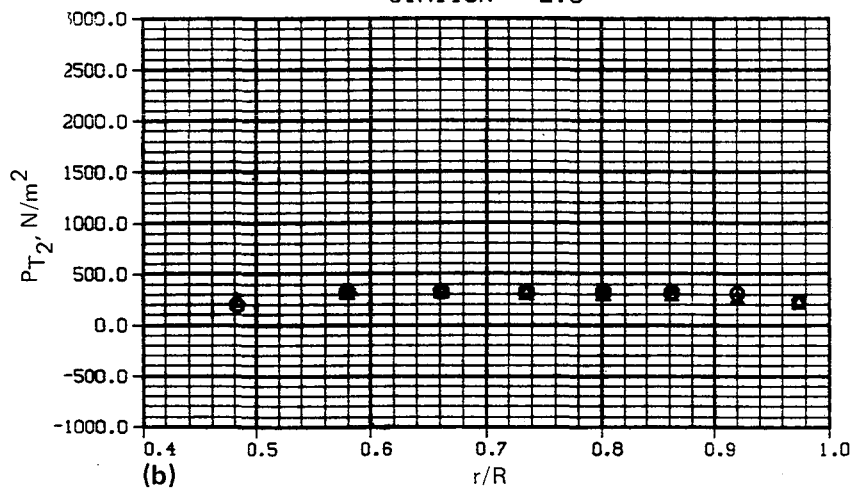
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 433. MASS FLOW: 52.69 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

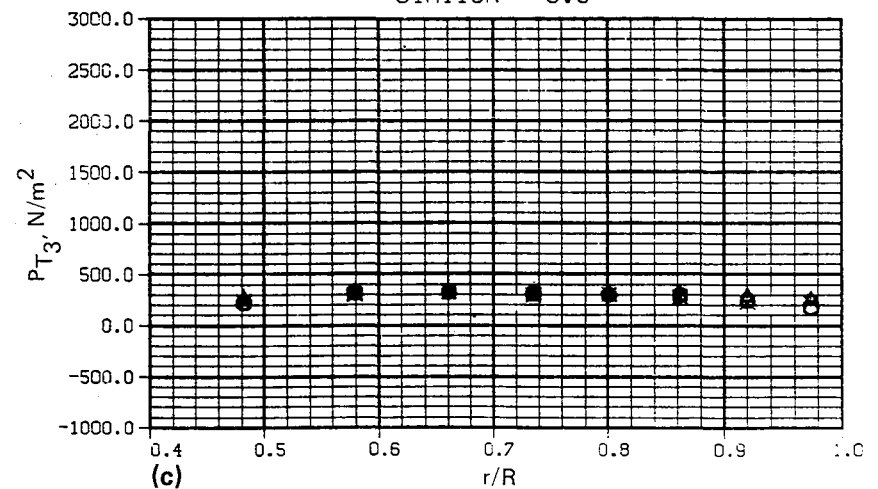


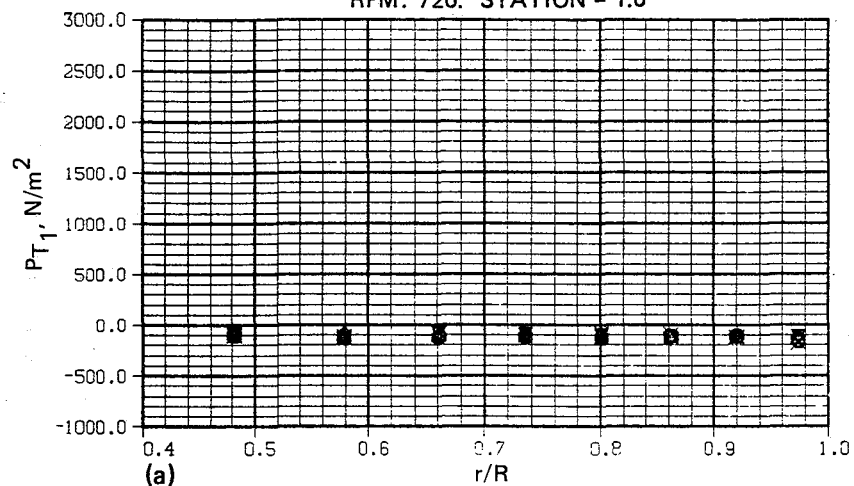
Figure D295.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

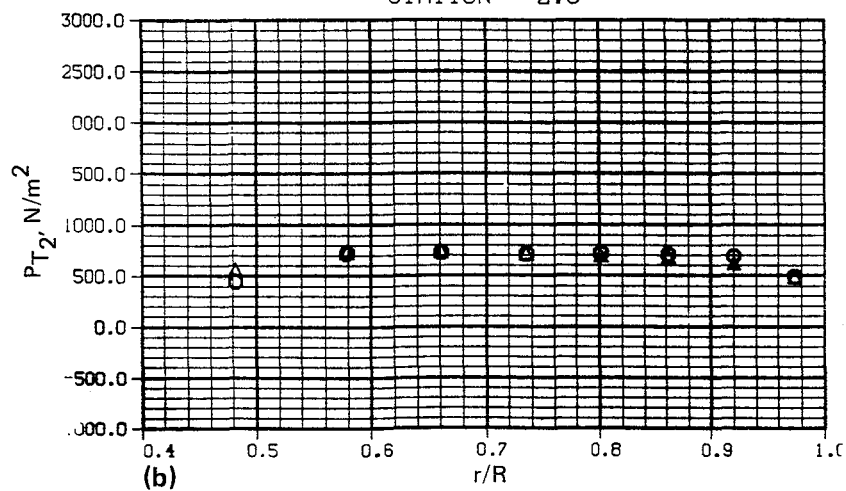
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 434. MASS FLOW: 79.60 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

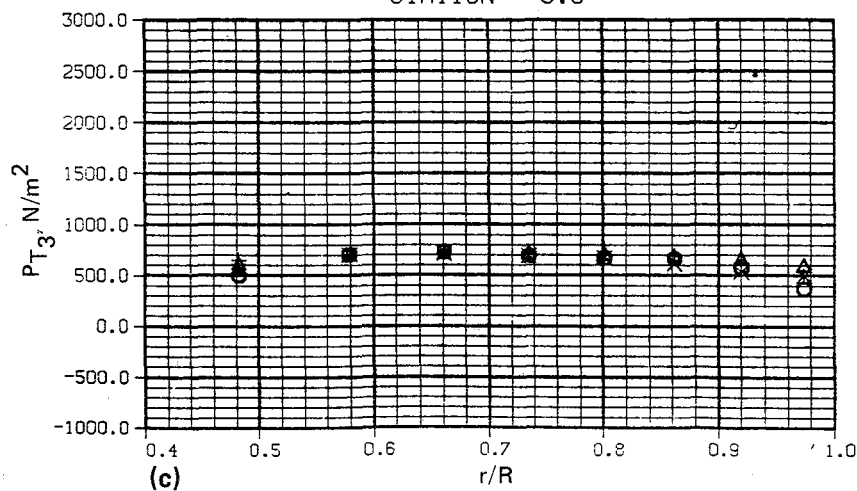


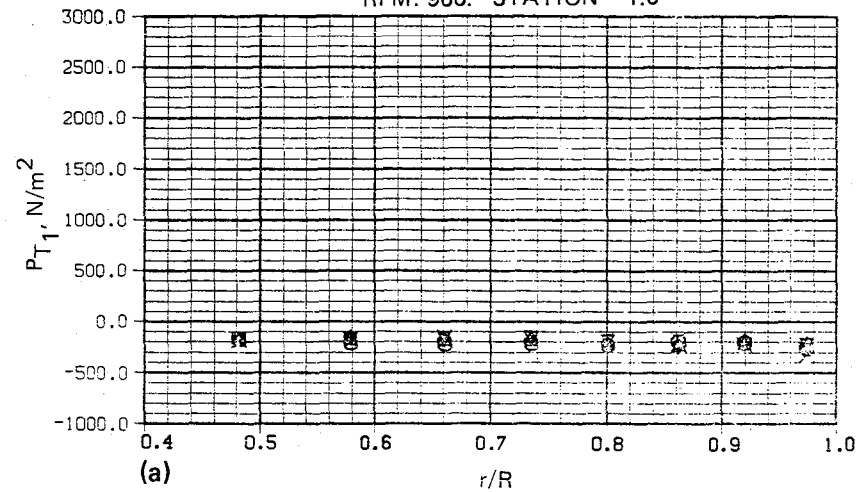
Figure D296.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

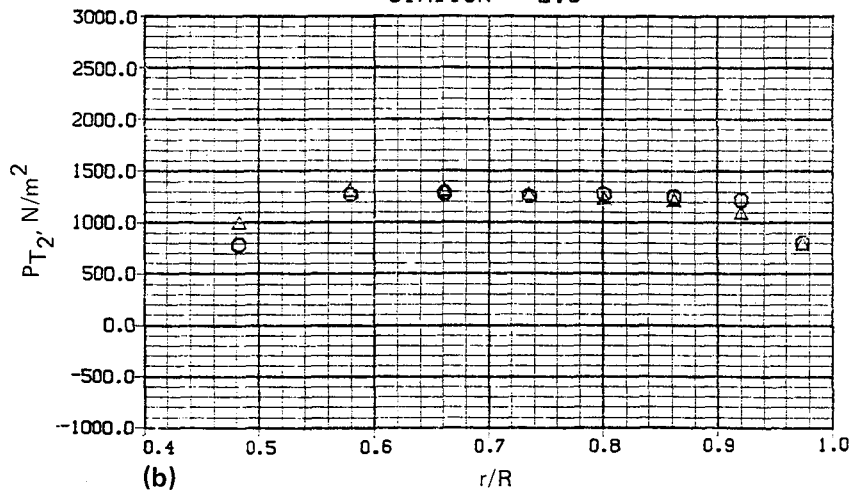
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 435. MASS FLOW: 107.04 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

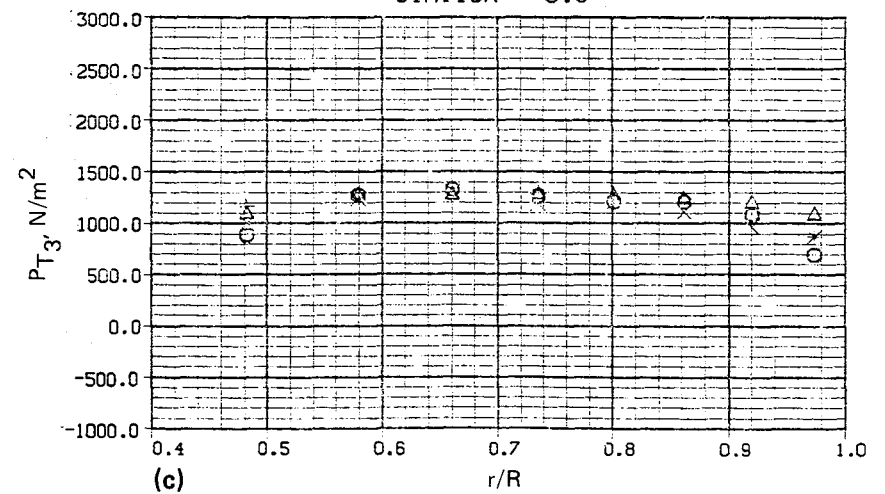


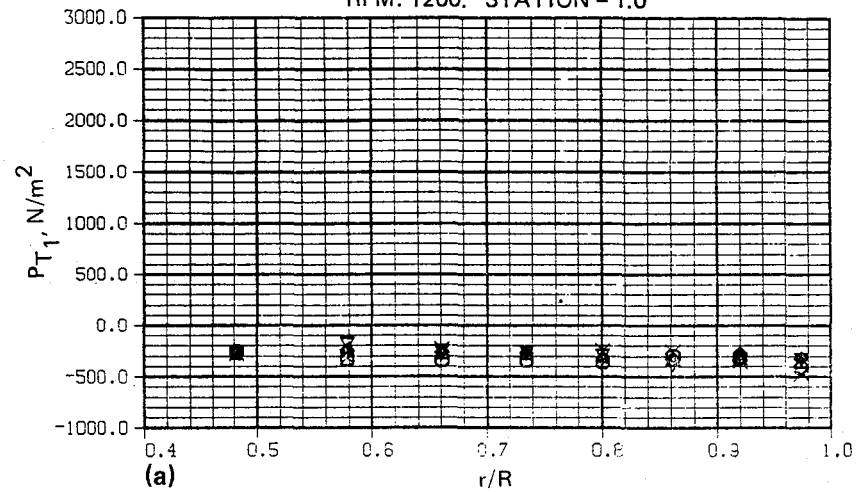
Figure D297.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

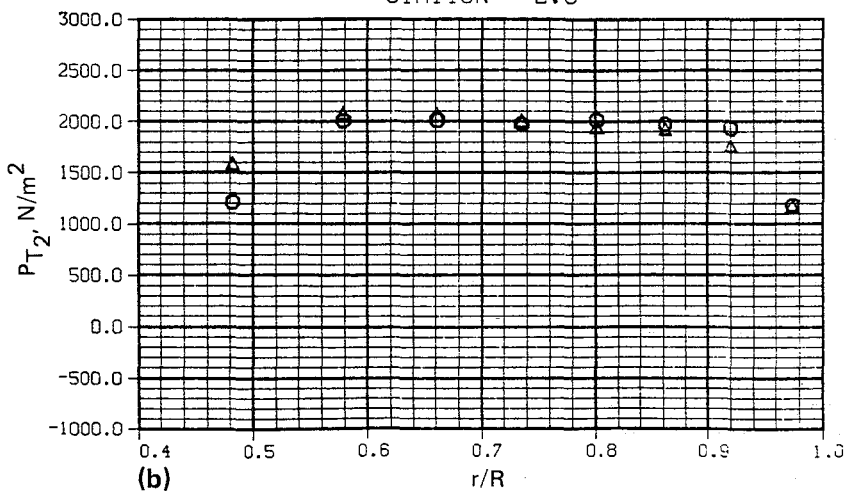
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 436. MASS FLOW: 135.78 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

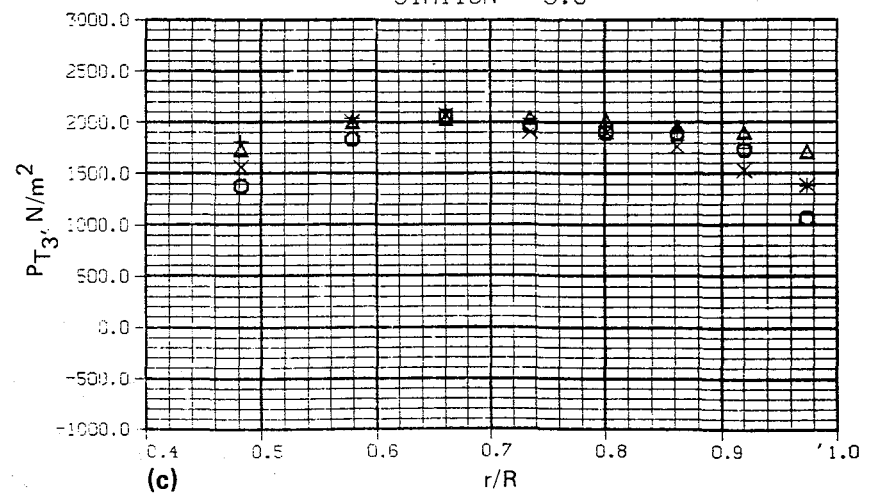


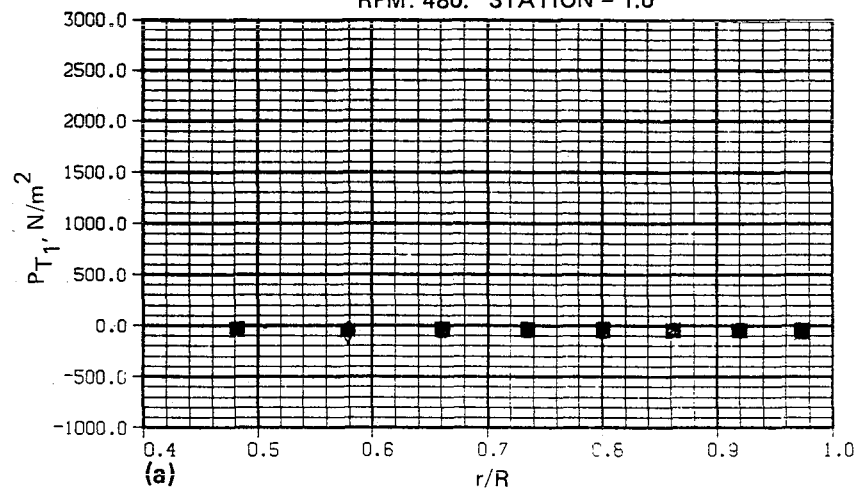
Figure D298.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

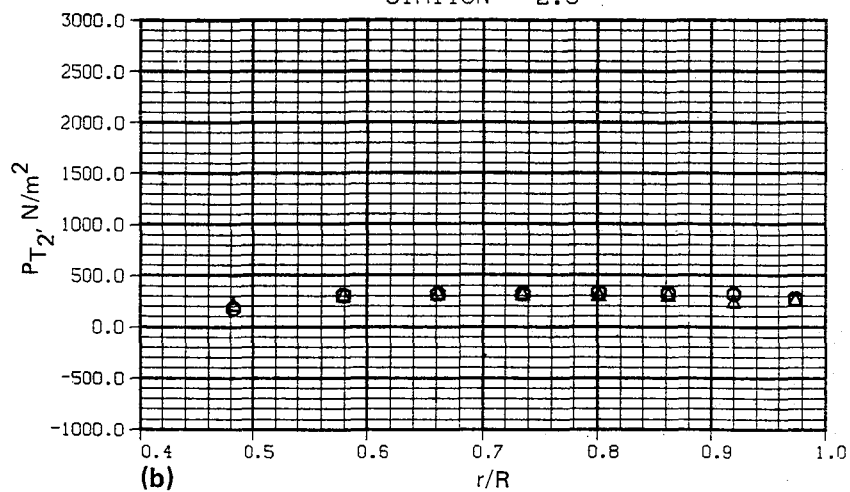
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 437. MASS FLOW: 47.57 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

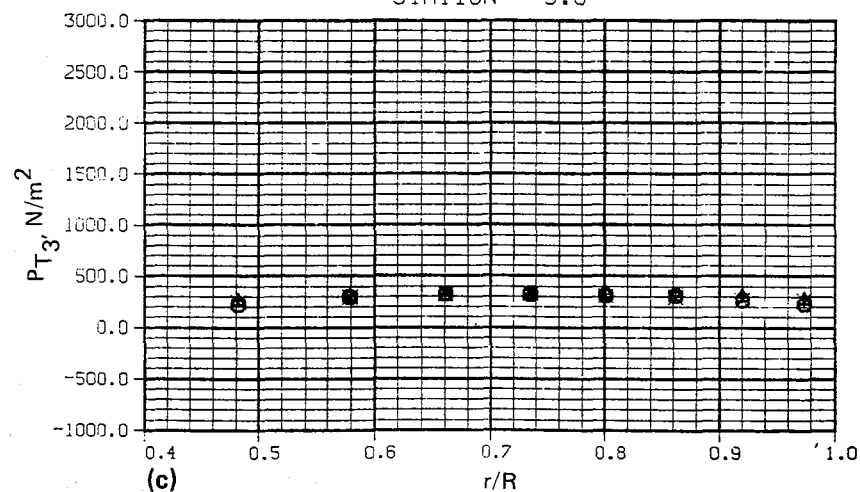


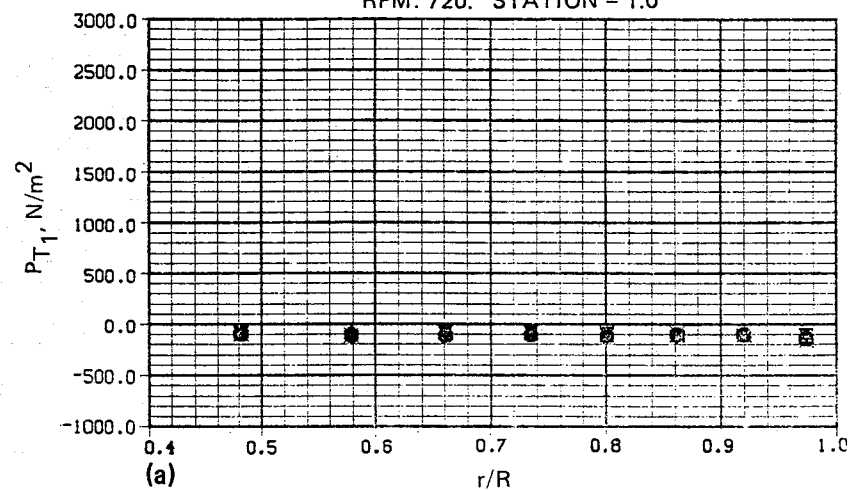
Figure D299.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

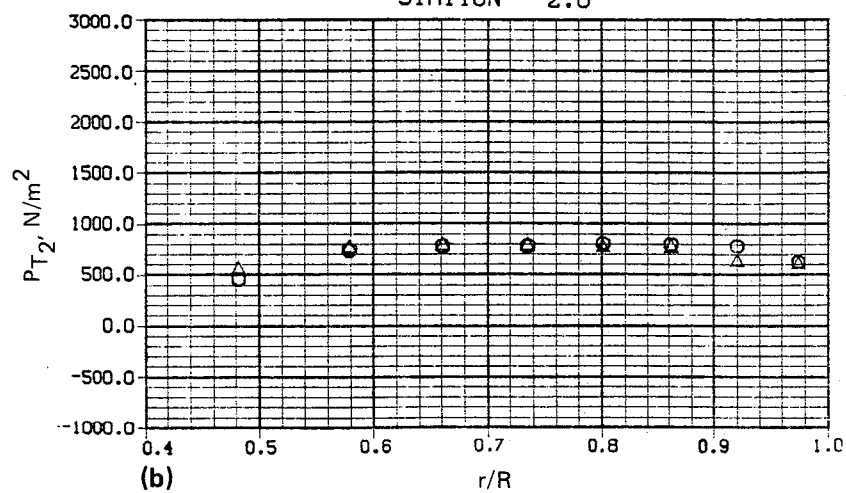
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 438. MASS FLOW: 75.70 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

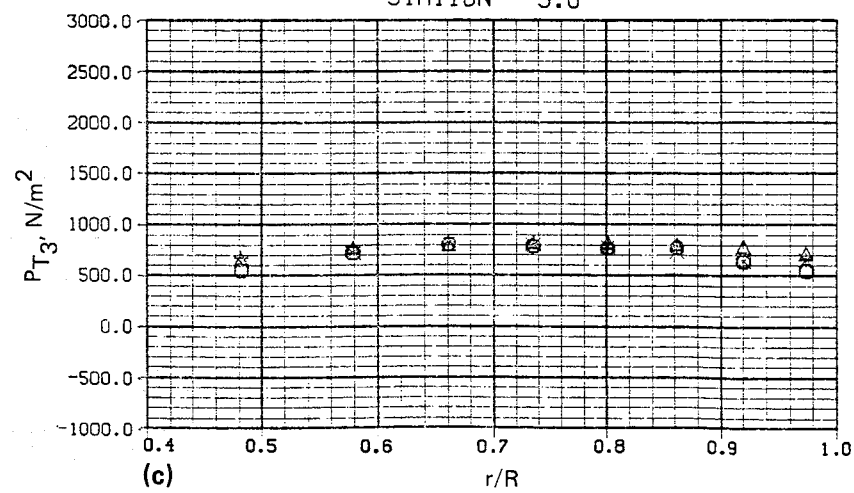


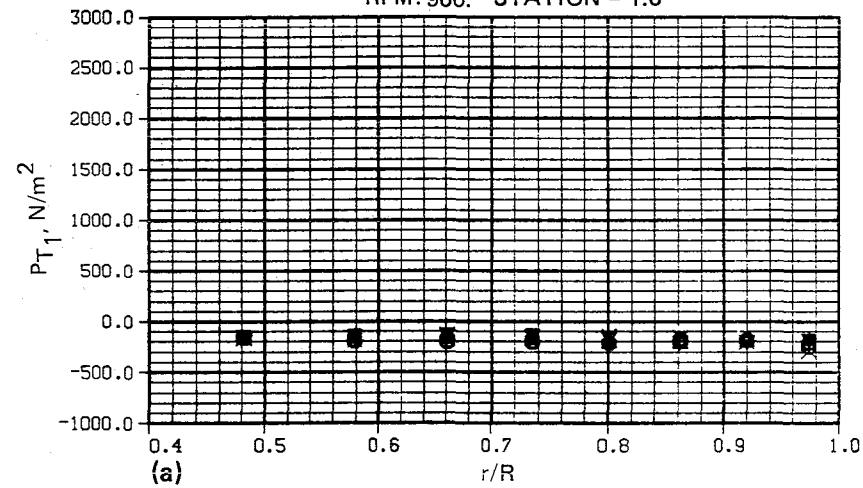
Figure D300.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

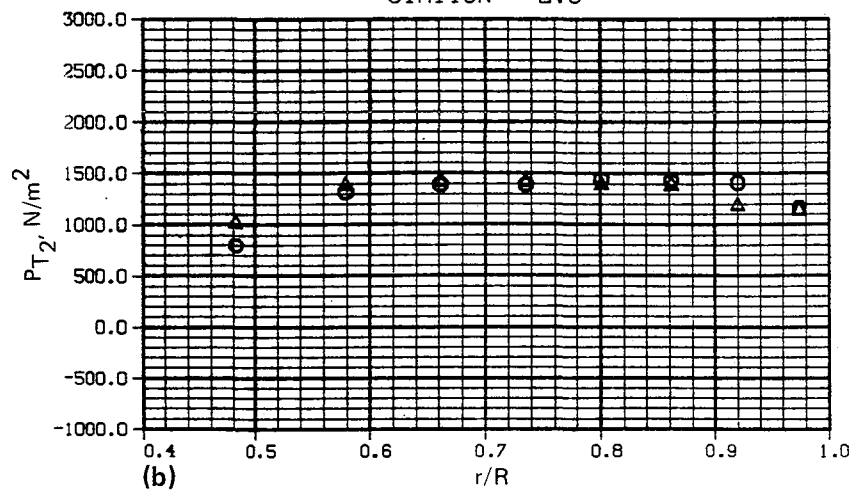
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 439. MASS FLOW:102.53 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

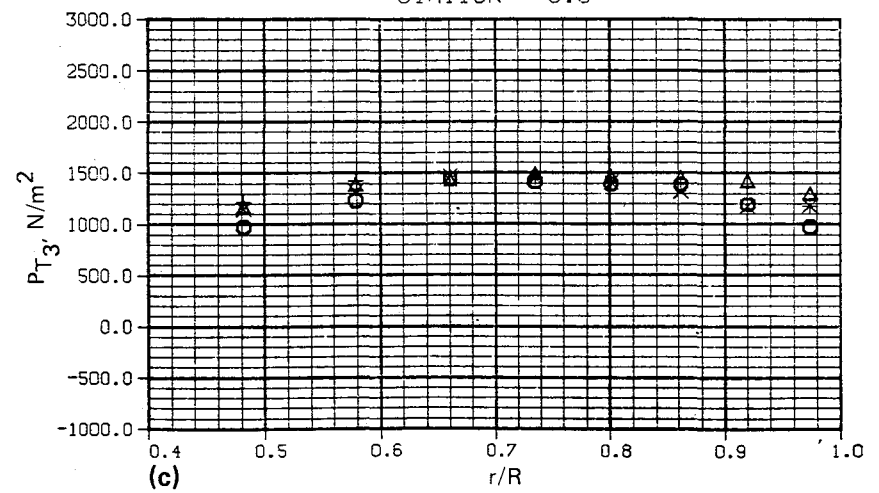


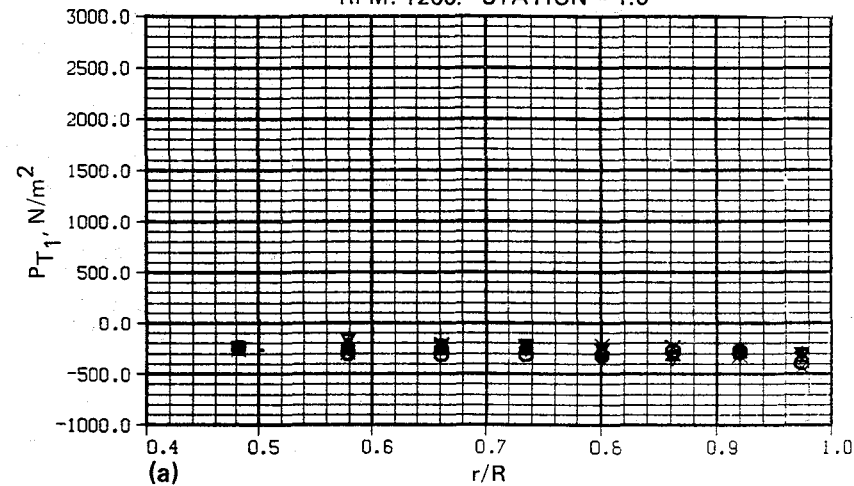
Figure D301.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

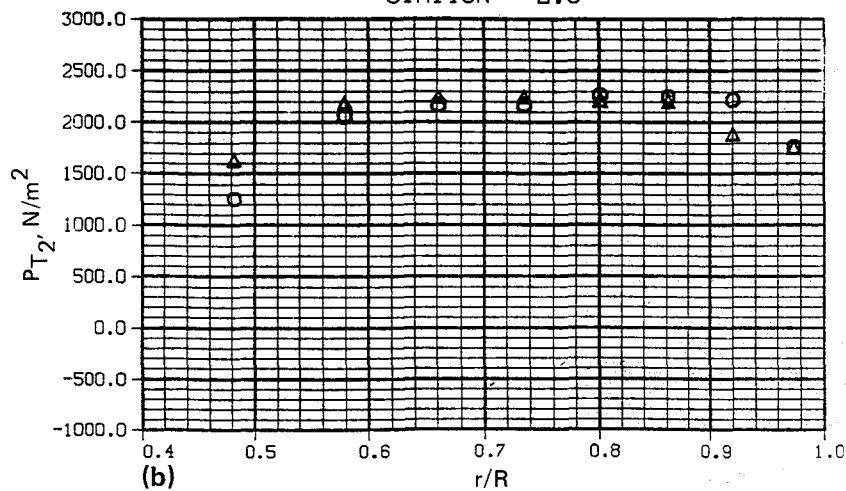
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 440. MASS FLOW: 129.38 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION = 3.0

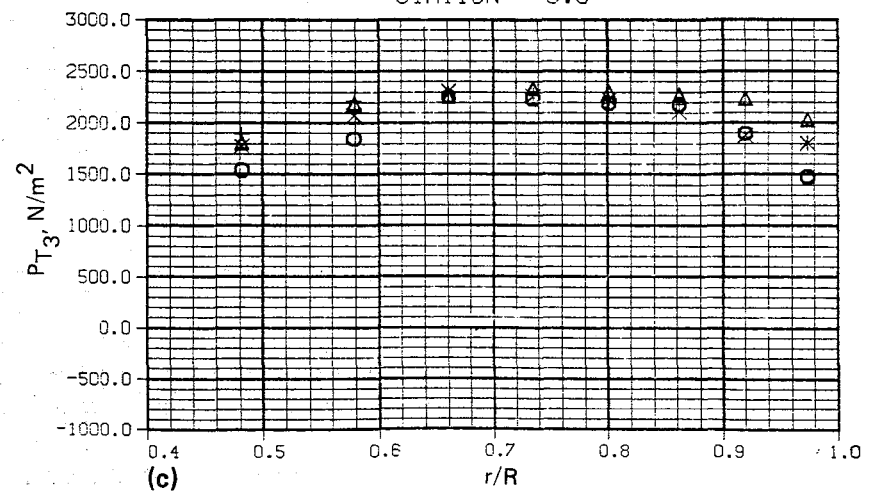
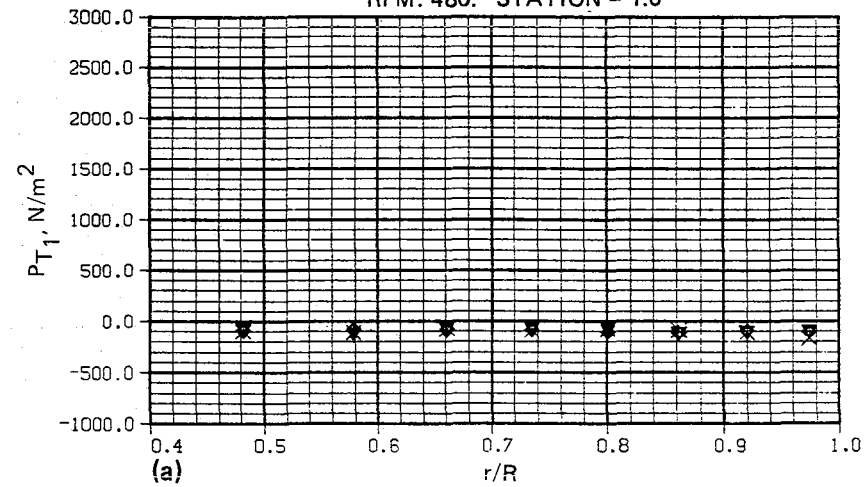
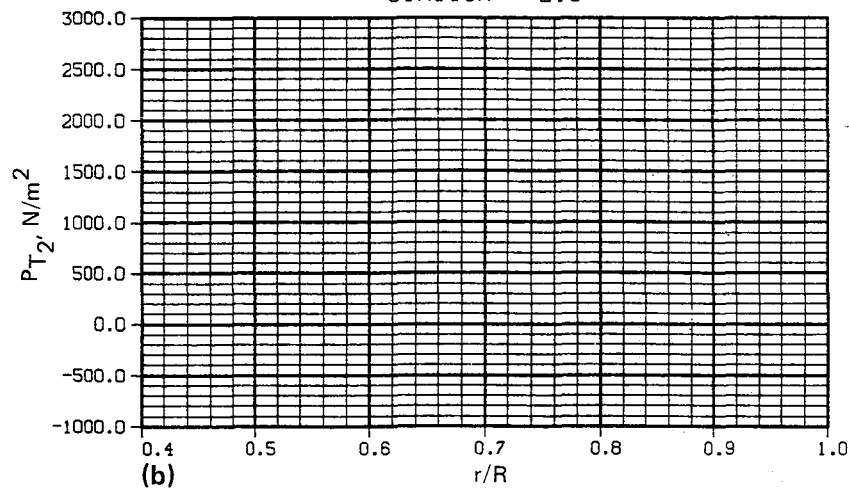


Figure D302.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 441. MASS FLOW: 47.25 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

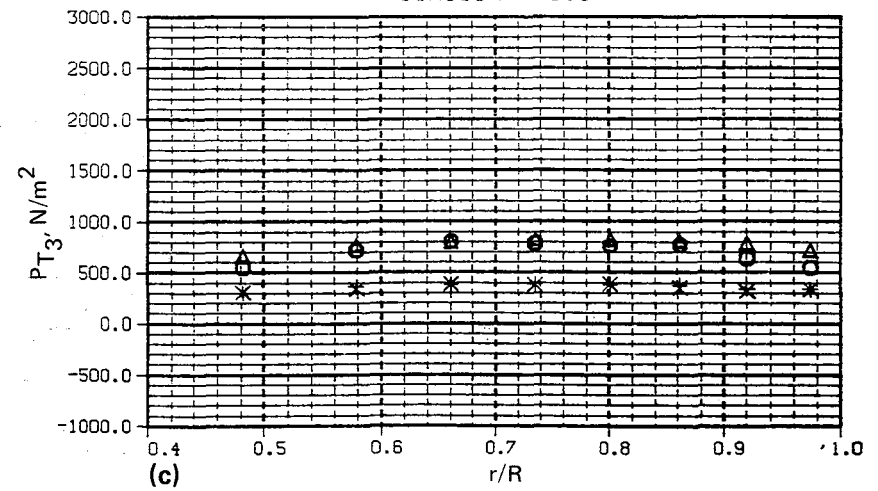


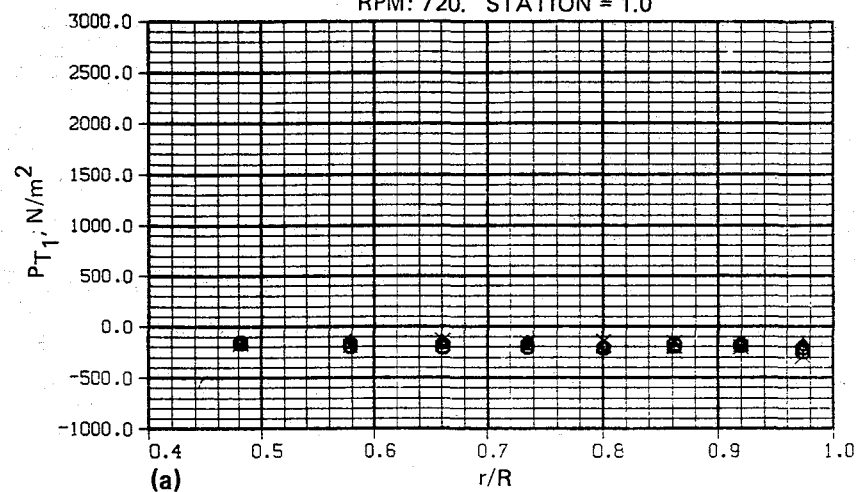
Figure D303.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

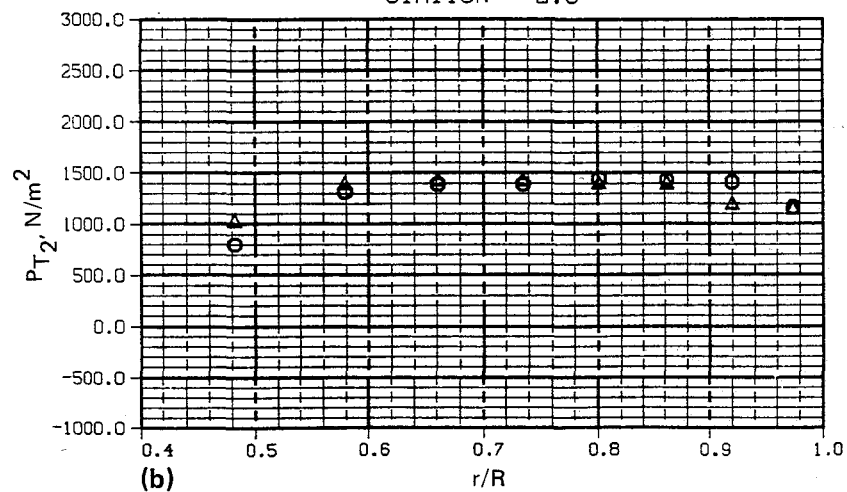
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 442. MASS FLOW: 71.67 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

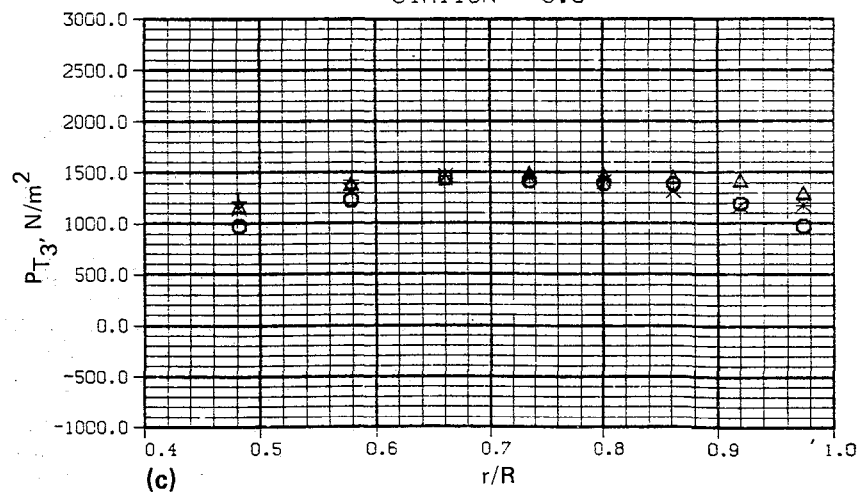


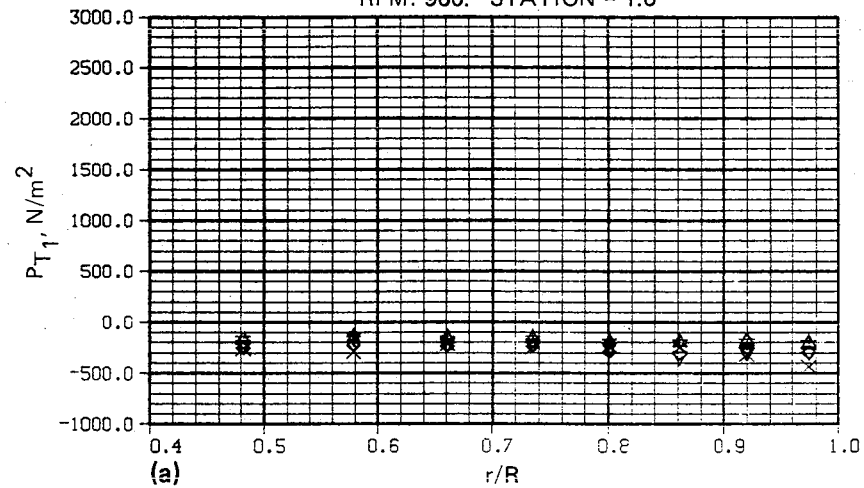
Figure D304.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

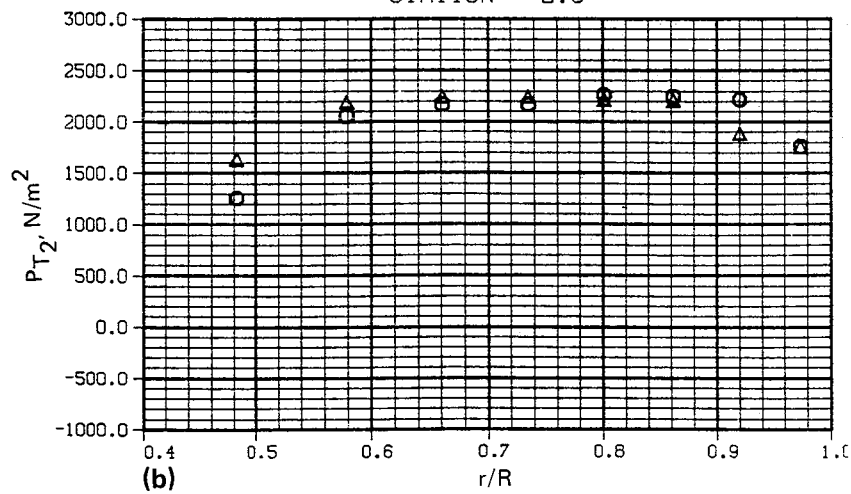
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 443. MASS FLOW: 97.02 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

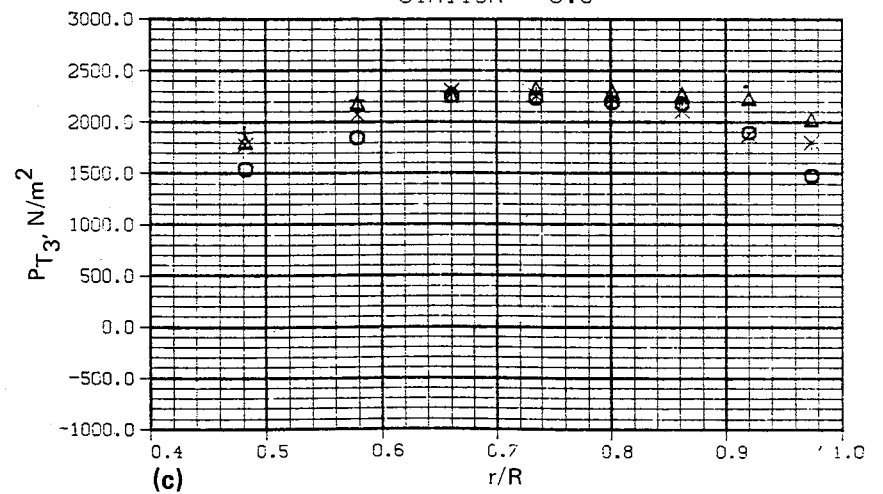


Figure D305.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 444. MASS FLOW: 122.44 slugs/sec

RPM: 1200. STATION = 1.0

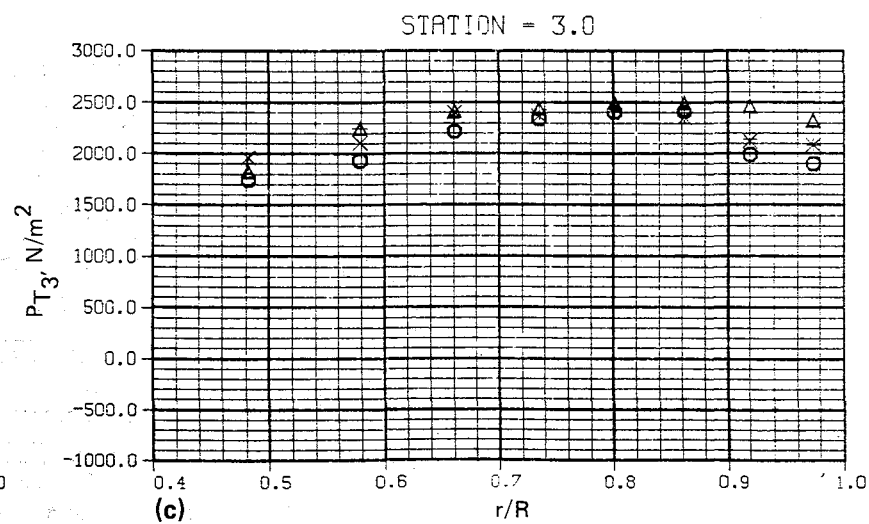
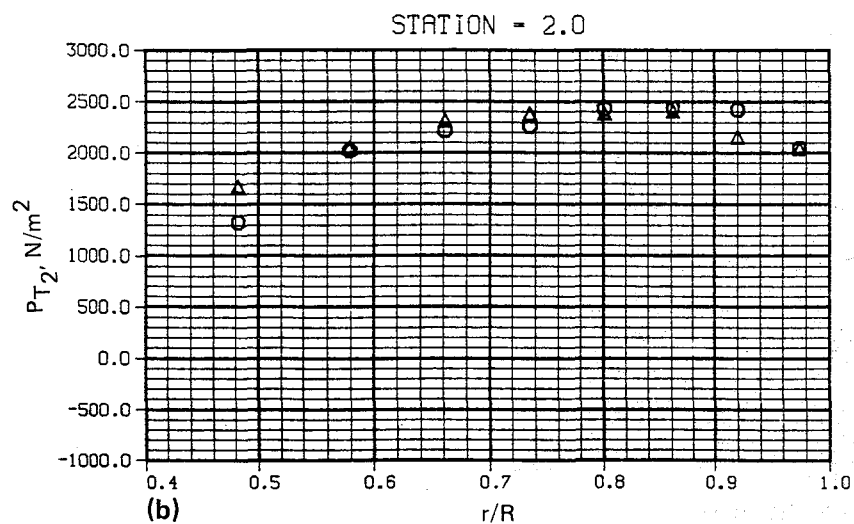
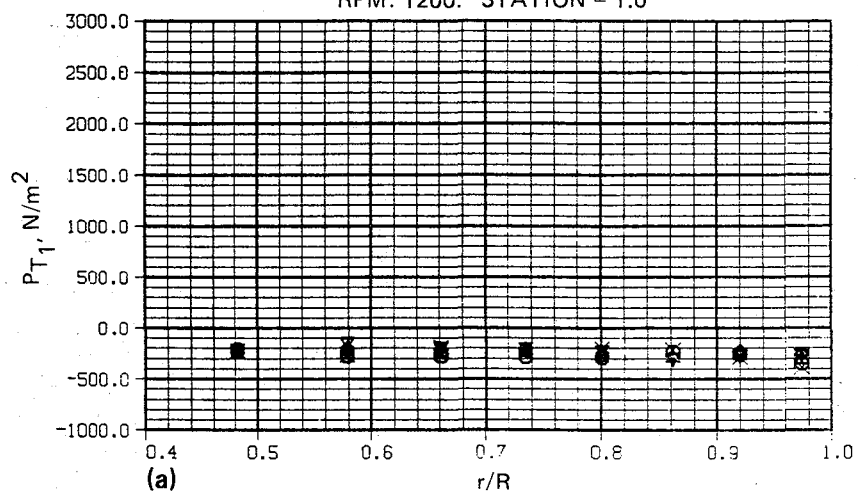


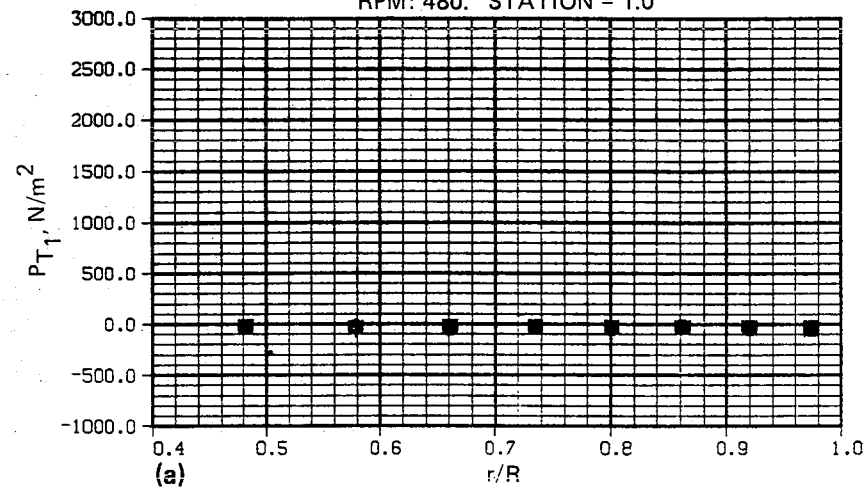
Figure D306.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

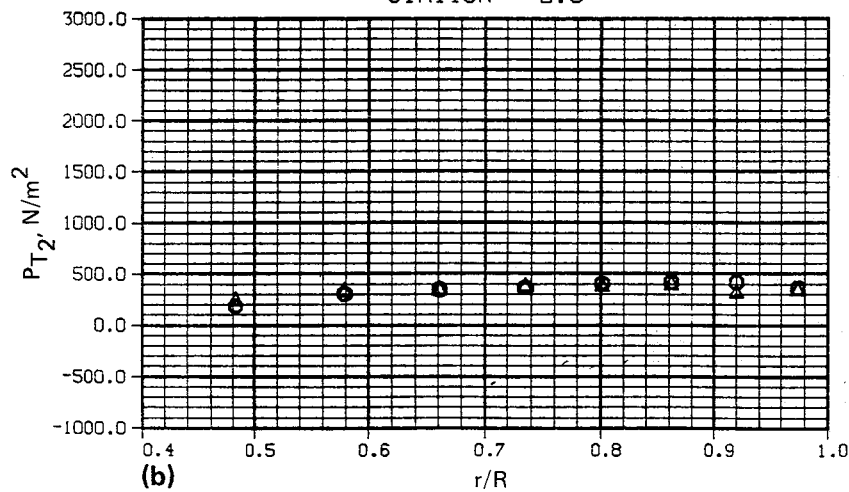
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 445. MASS FLOW: 41.58 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

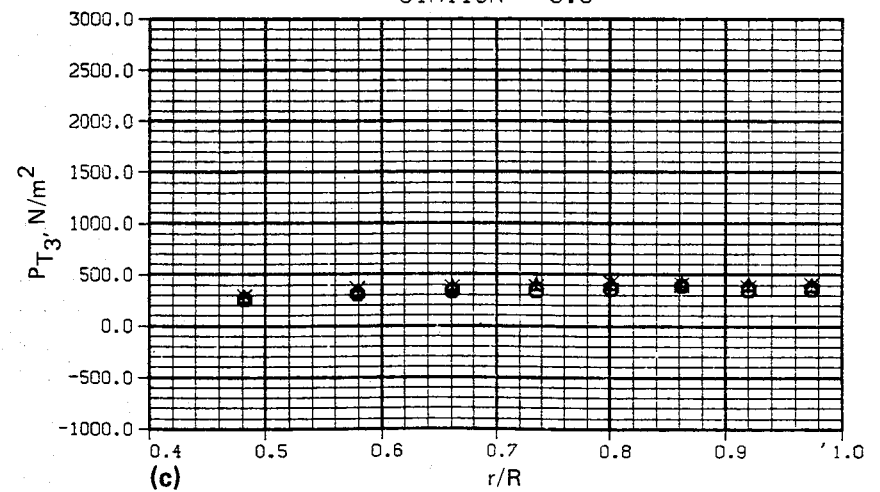


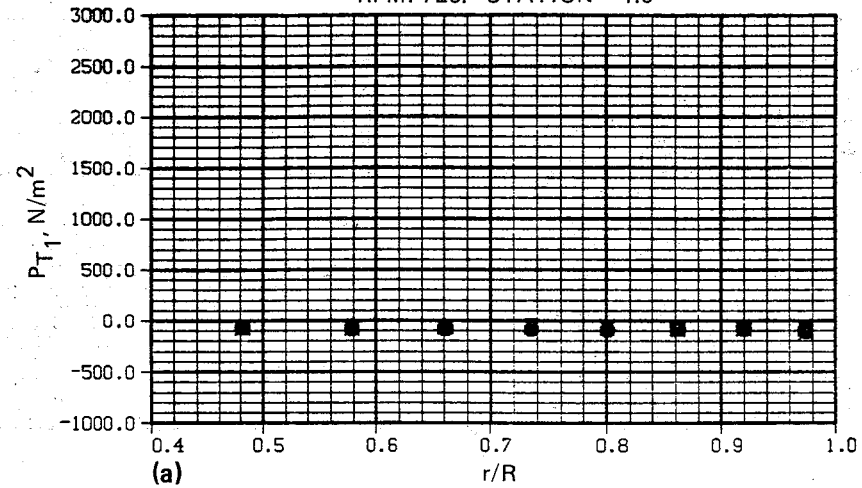
Figure D307.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

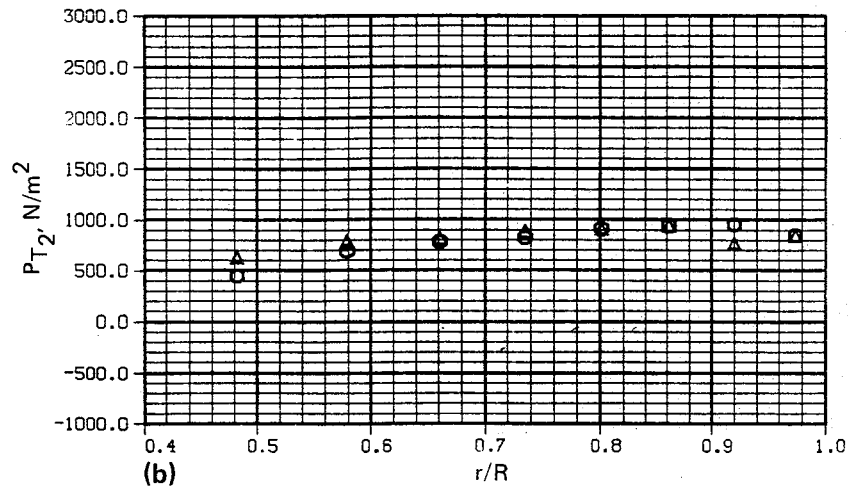
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 446. MASS FLOW: 63.30 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

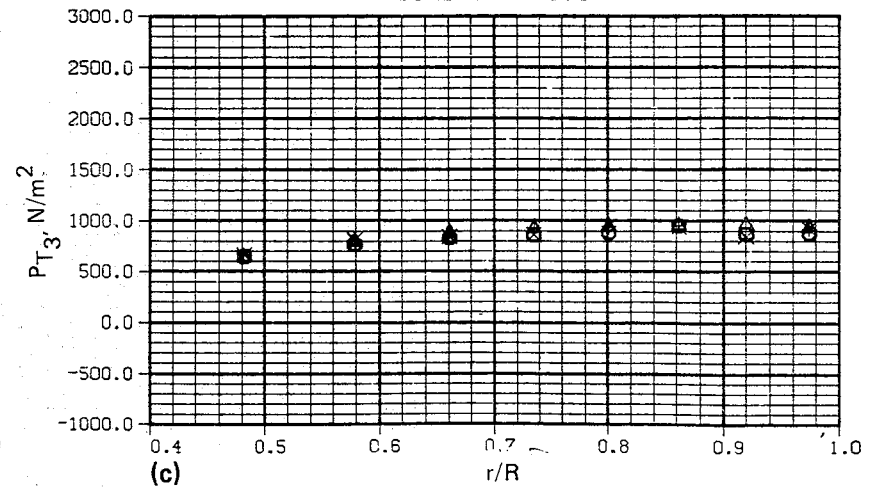


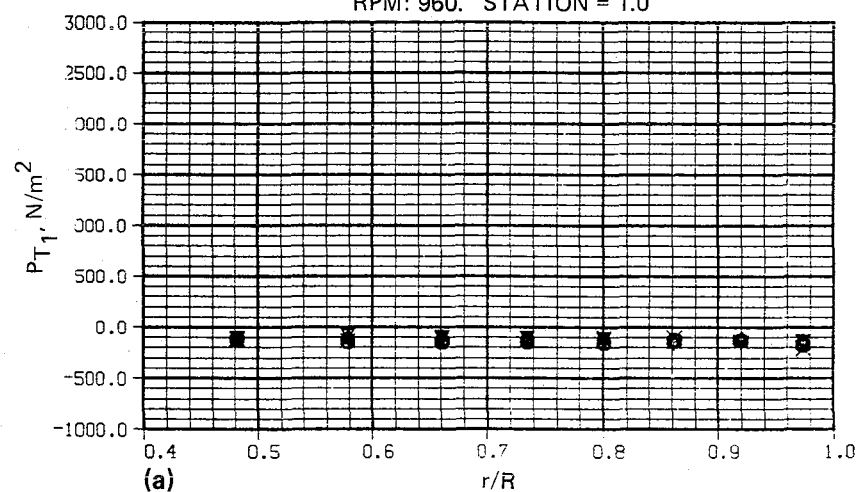
Figure D308.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

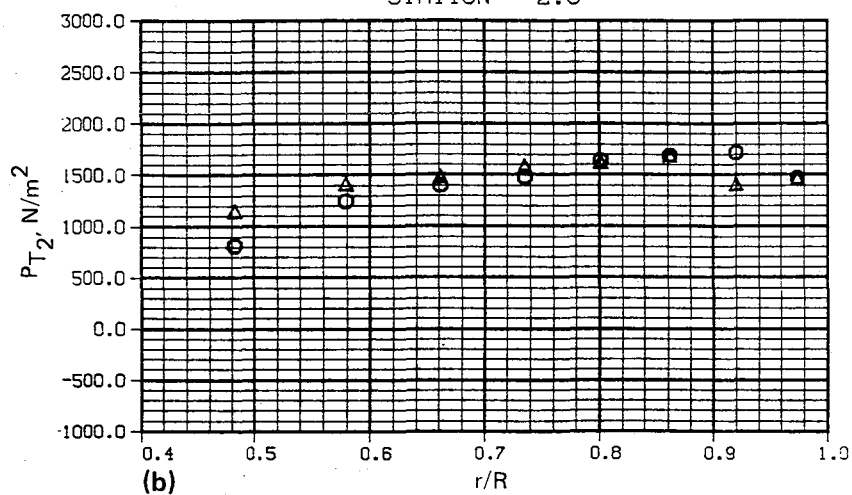
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 447. MASS FLOW: 85.96 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

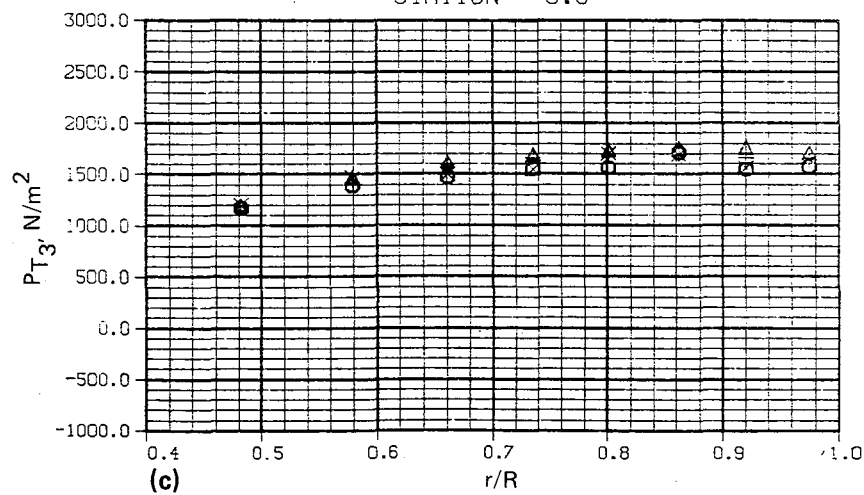


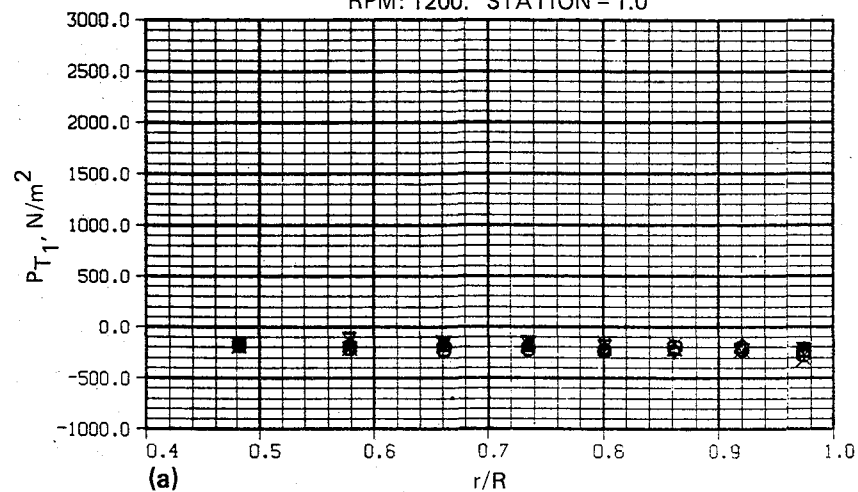
Figure D309.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

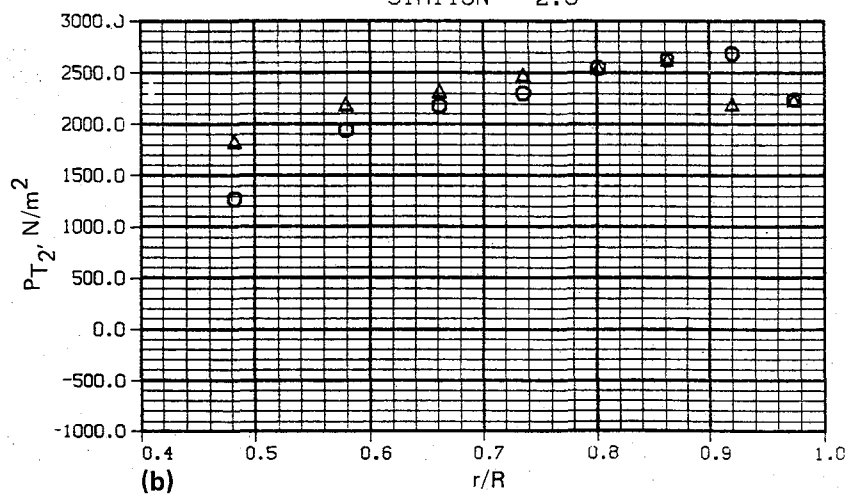
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 448. MASS FLOW: 108.36 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

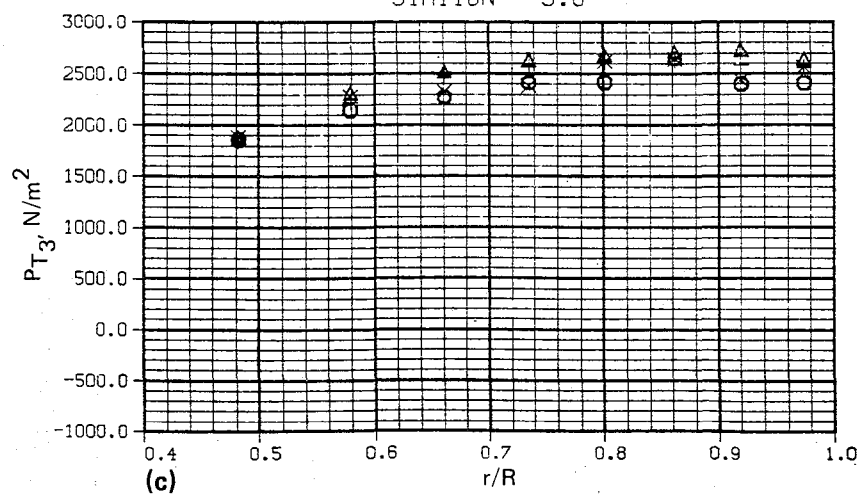


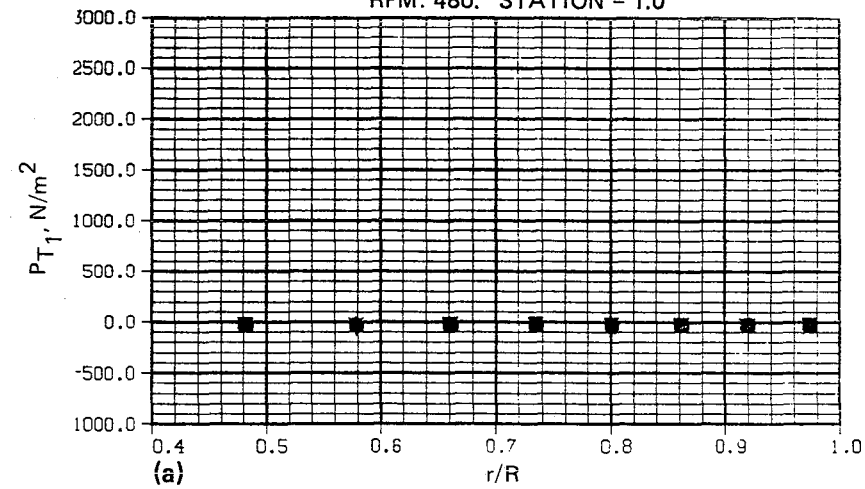
Figure D310.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

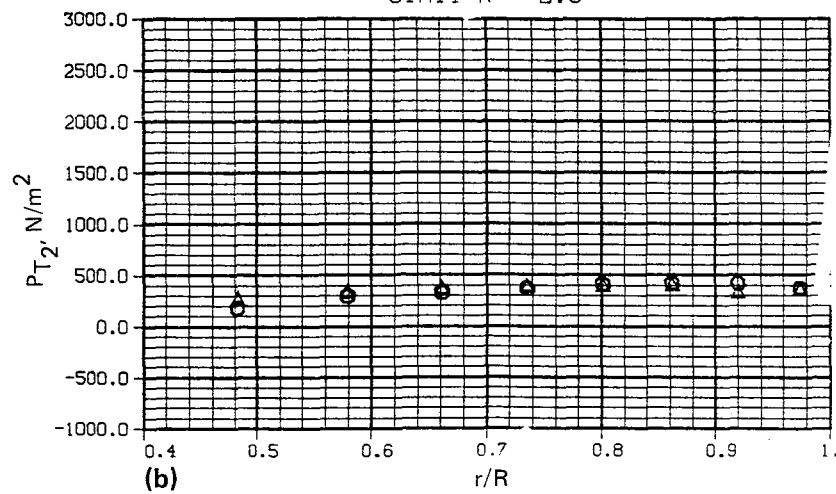
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 449. MASS FLOW: 38.23 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

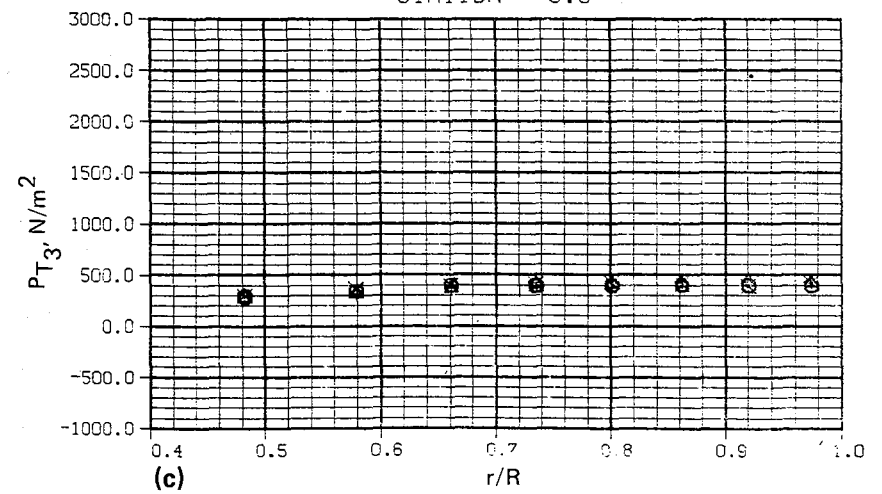


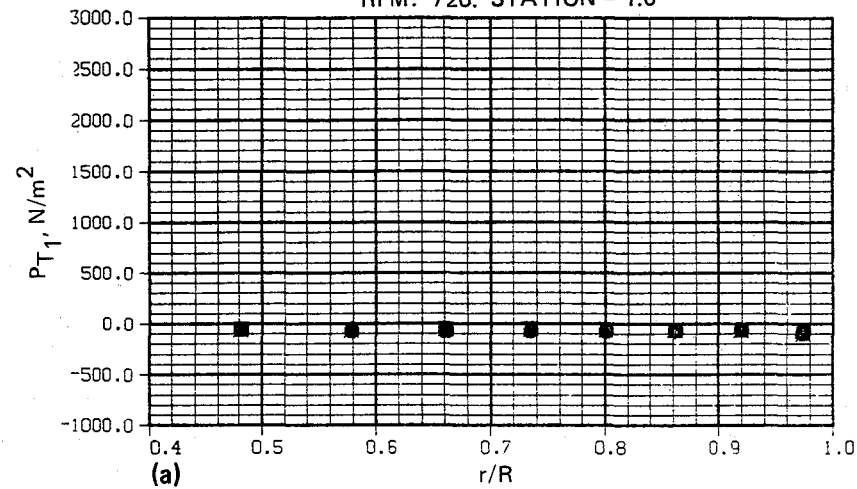
Figure D311.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

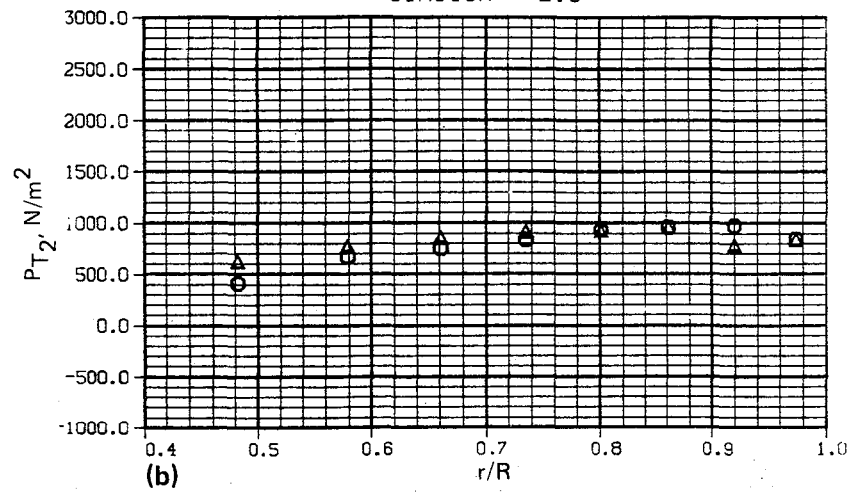
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 450. MASS FLOW: 58.64 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

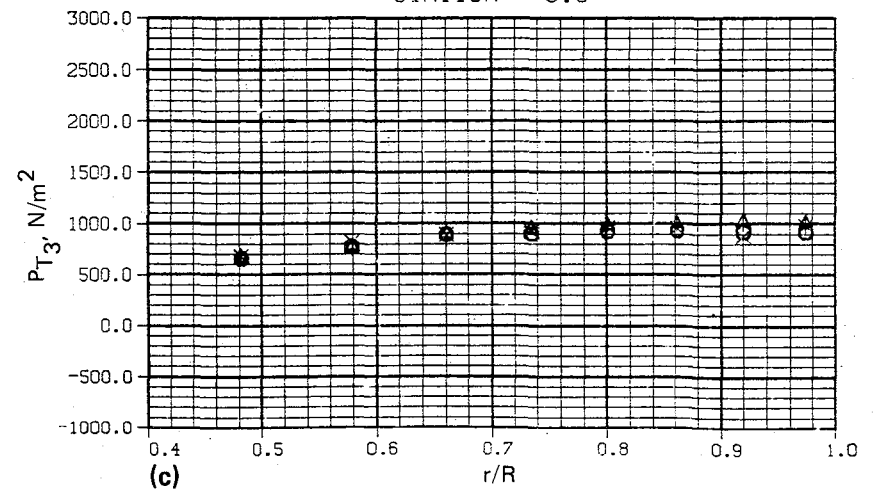


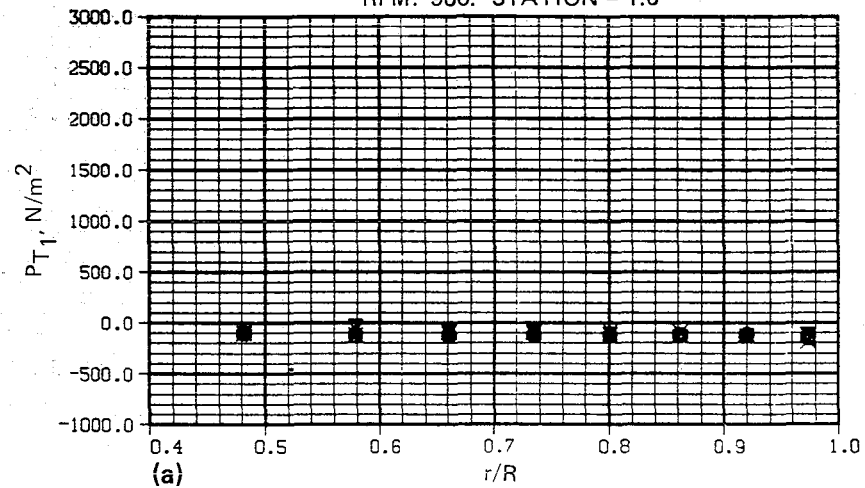
Figure D312.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

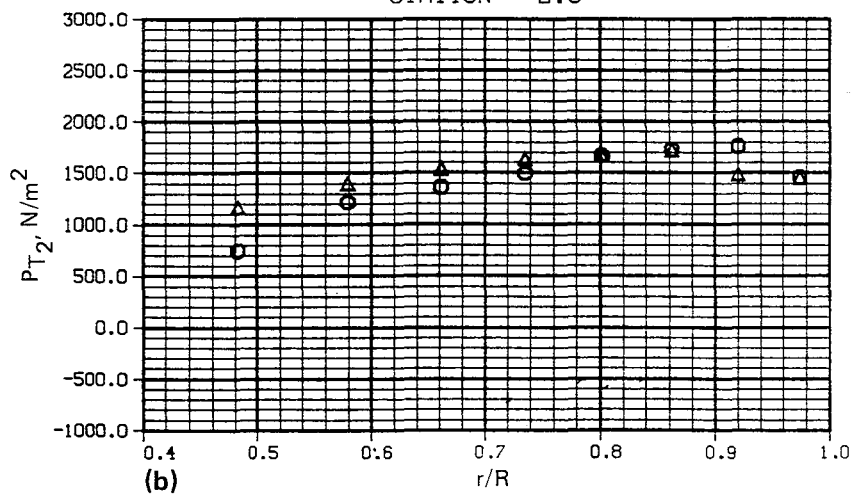
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 451, MASS FLOW: 79.46 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

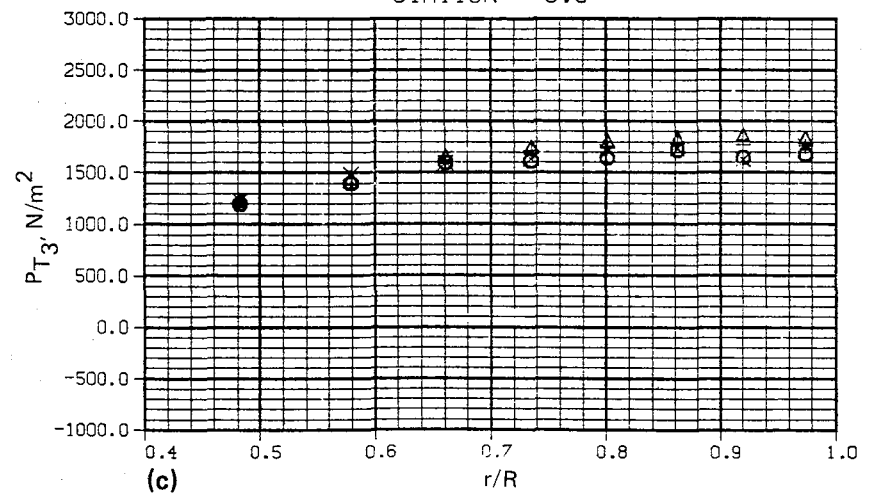


Figure D313.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 452. MASS FLOW: 101.63 slugs/sec

RPM:1200. STATION = 1.0

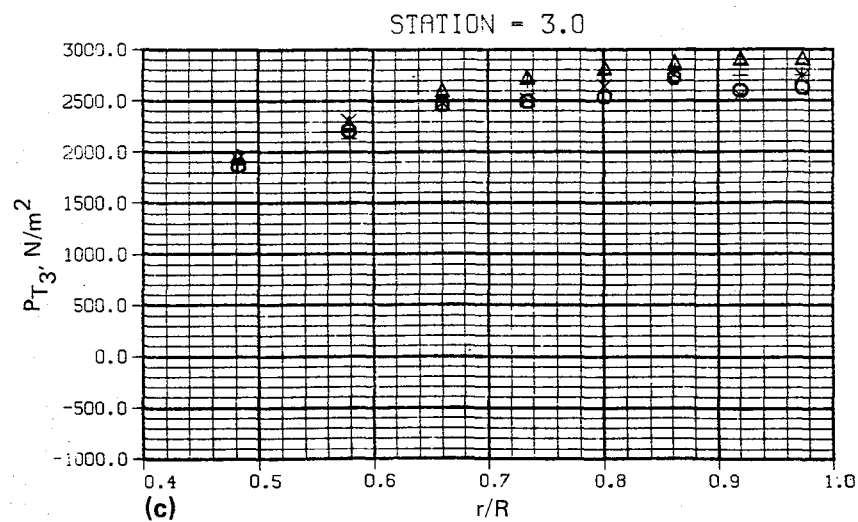
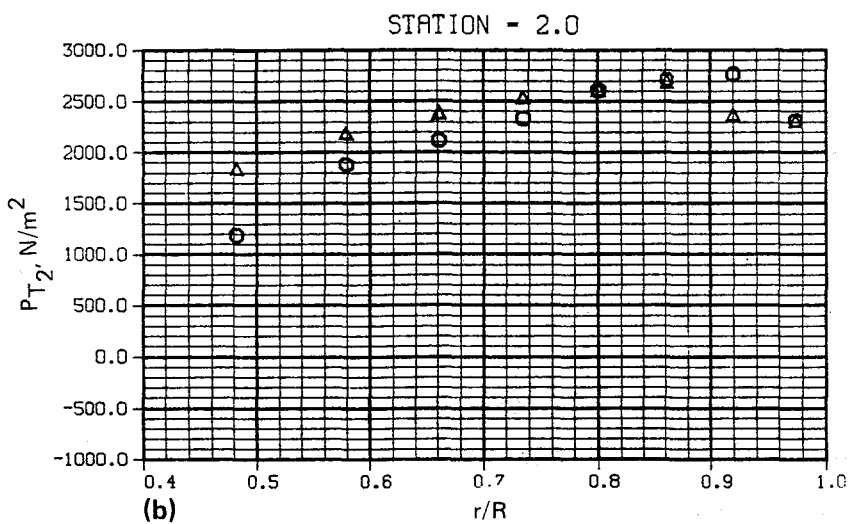
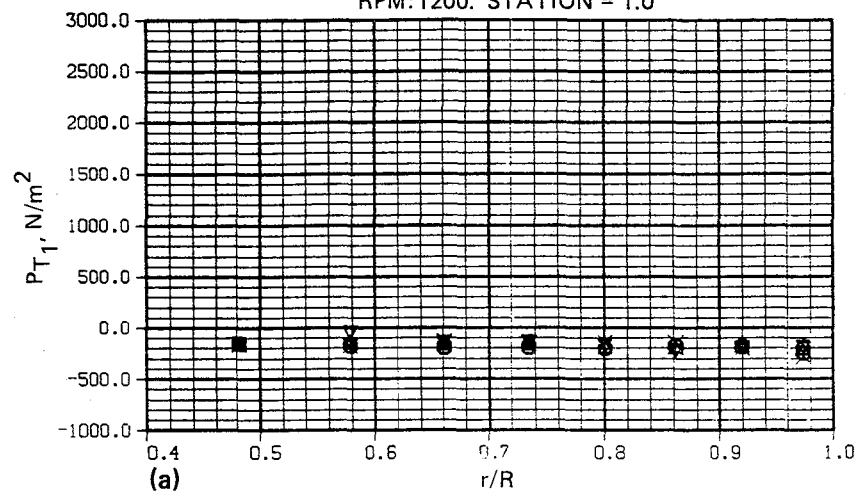
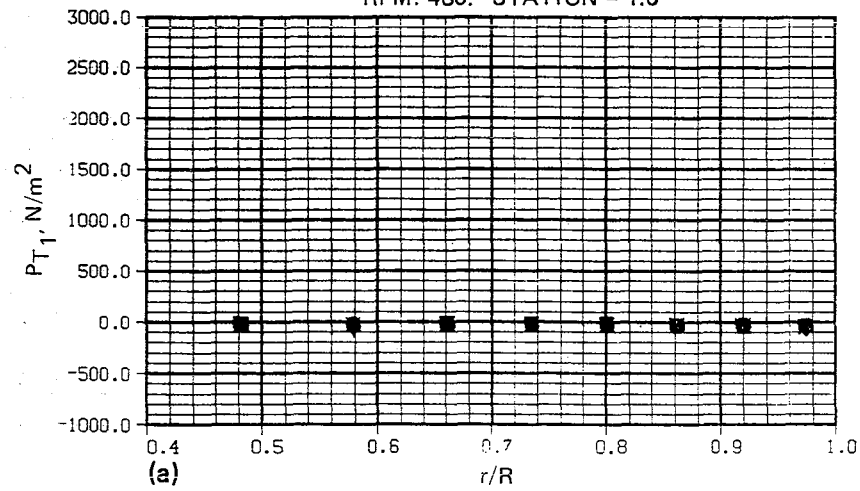
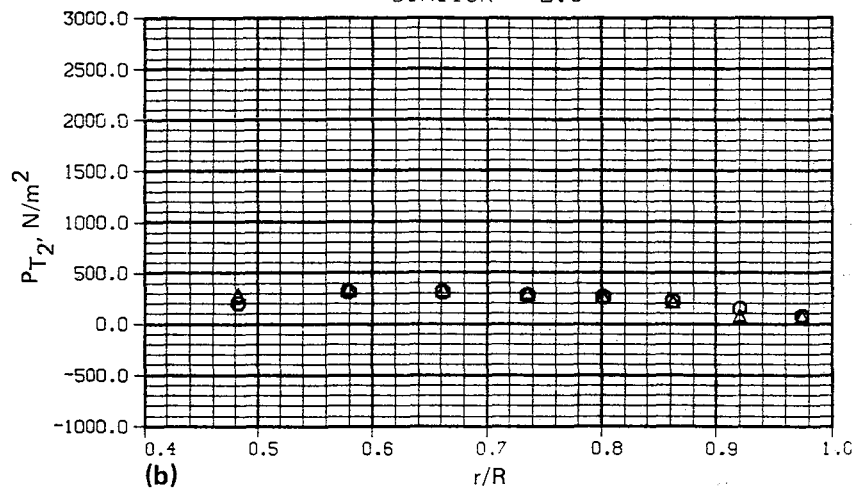


Figure D314.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 35.4
 RUN NO: 453. MASS FLOW: 31.30 slugs/sec
 RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

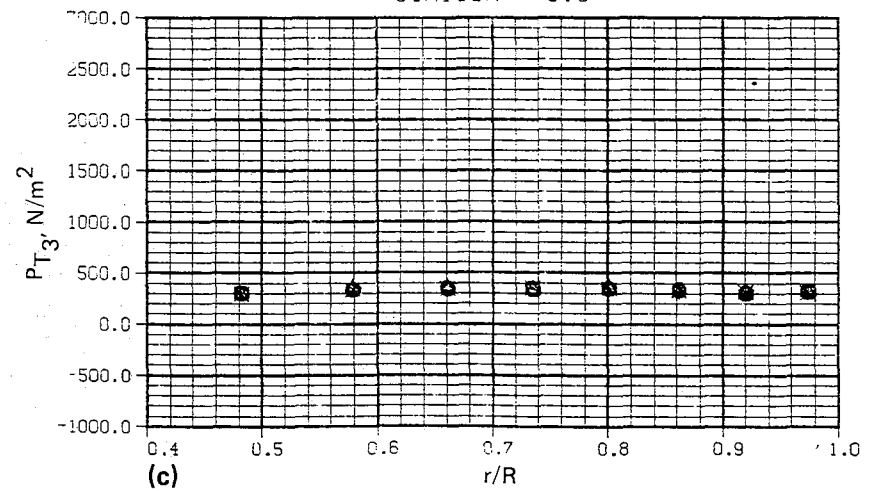


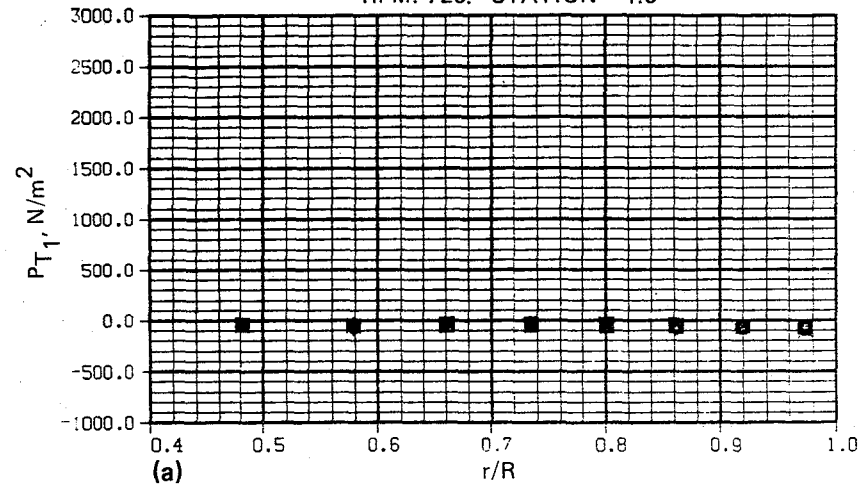
Figure D315.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

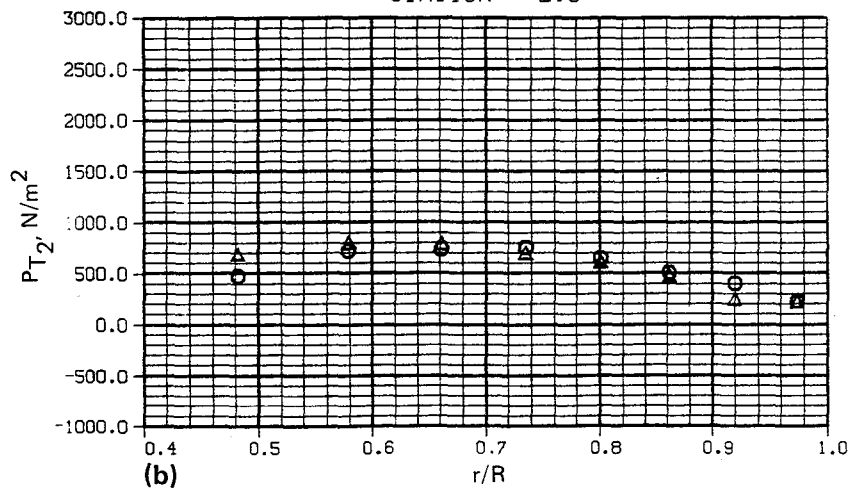
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 454. MASS FLOW: 49.96 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

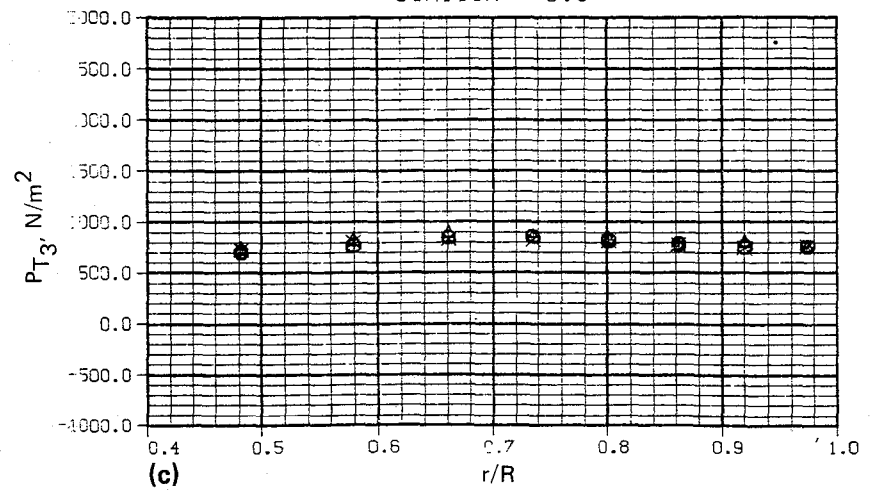


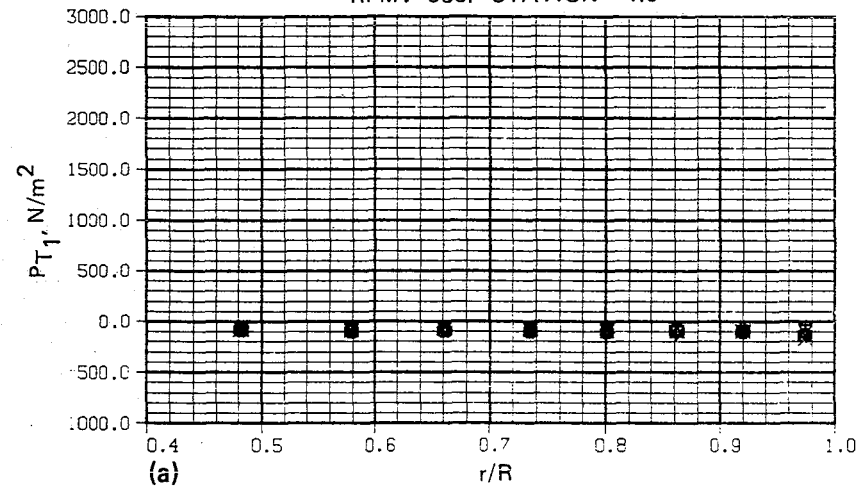
Figure D316.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

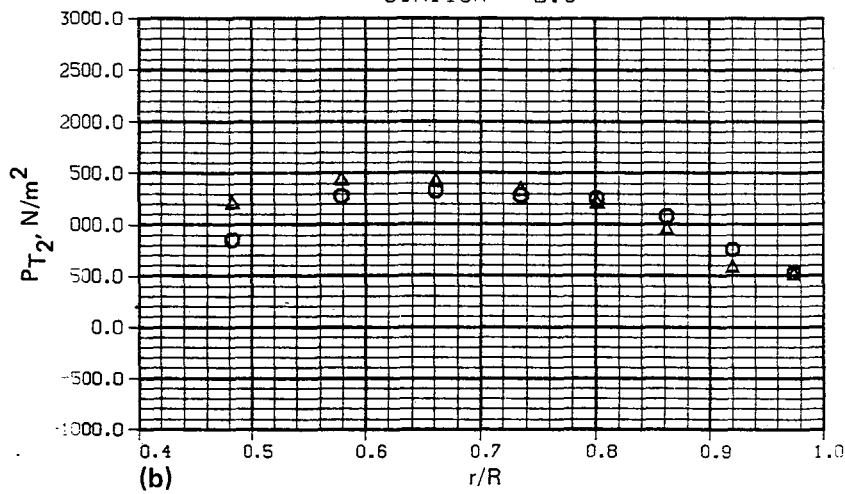
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 455. MASS FLOW: 67.49 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

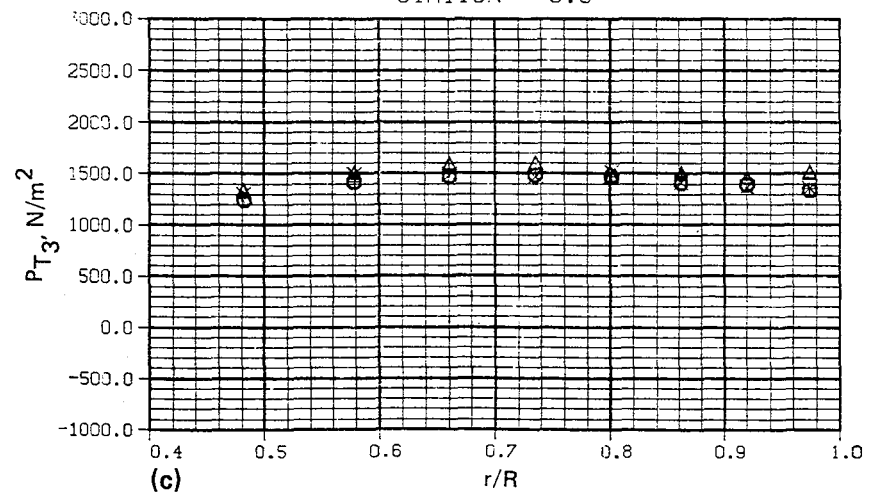


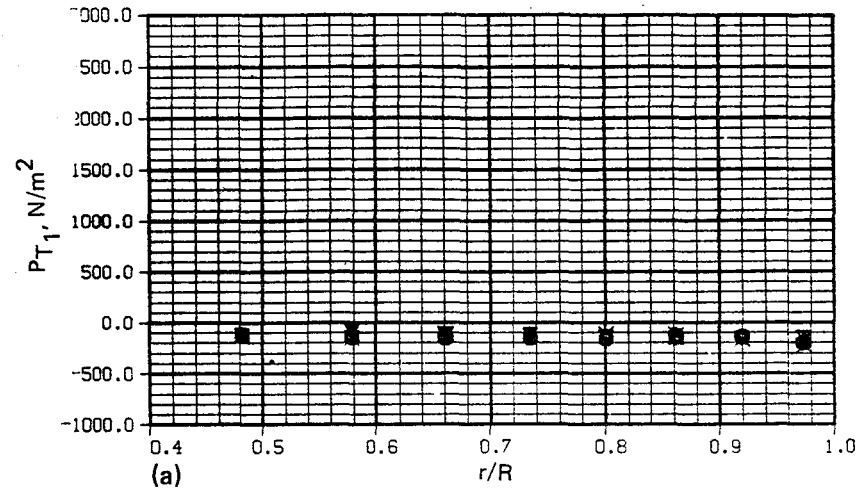
Figure D317.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

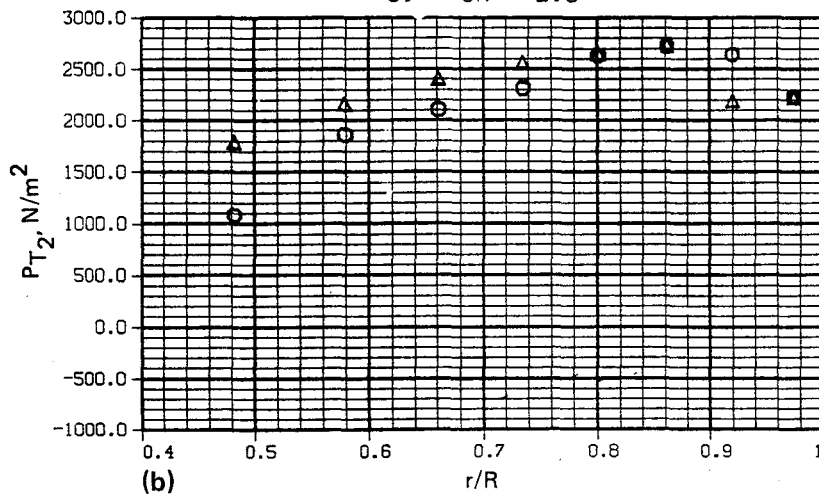
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 456. MASS FLOW: 91.90 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

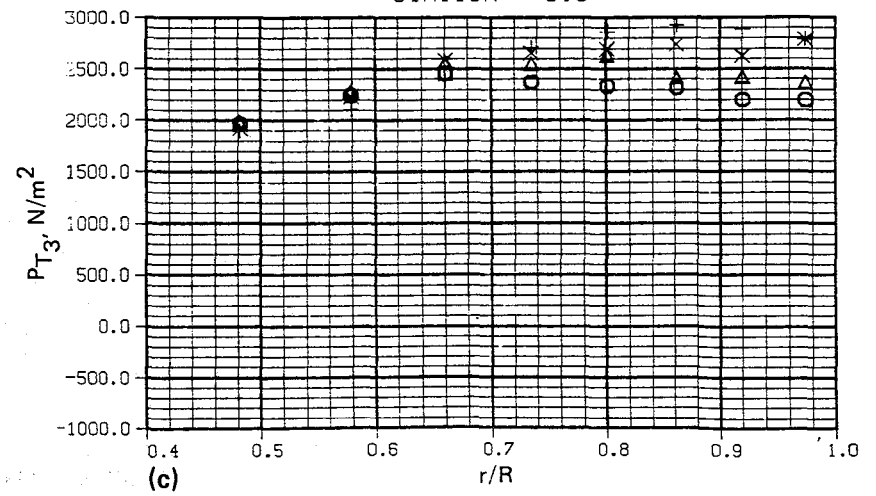


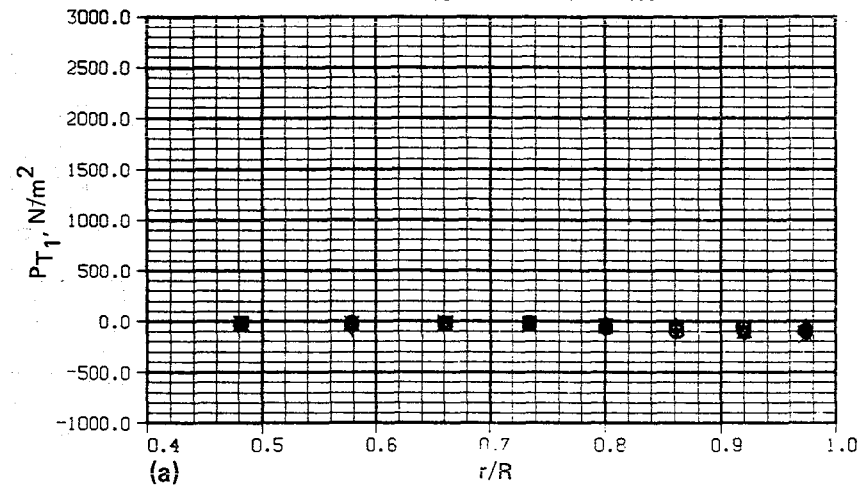
Figure D318.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

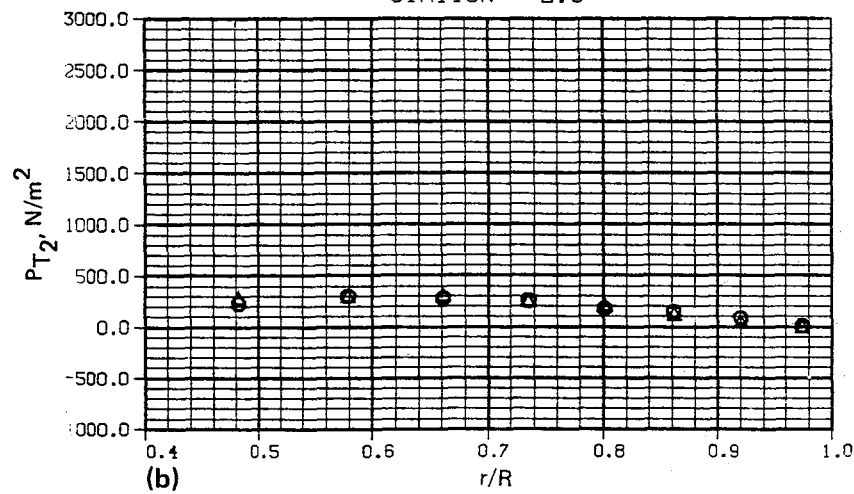
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 457. MASS FLOW: 22.52 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

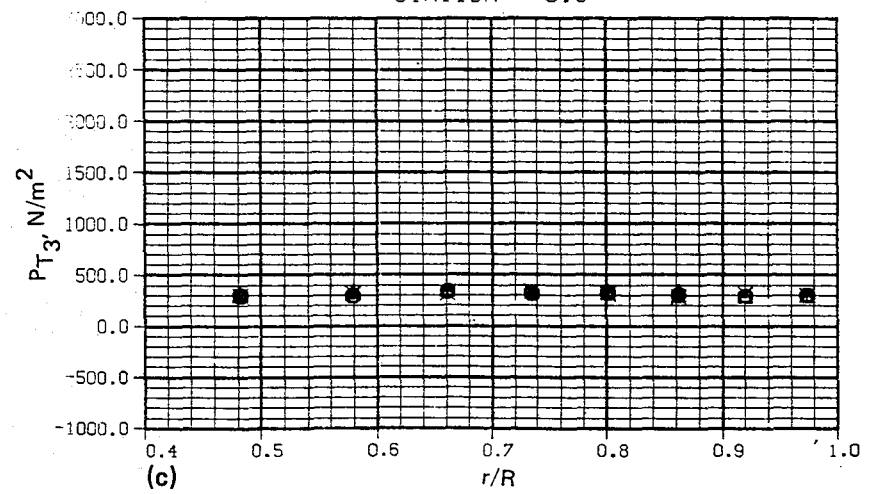


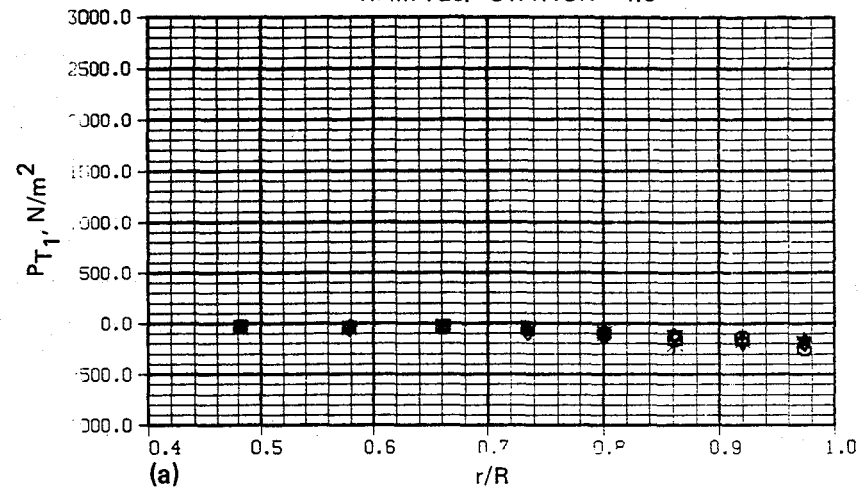
Figure D319.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

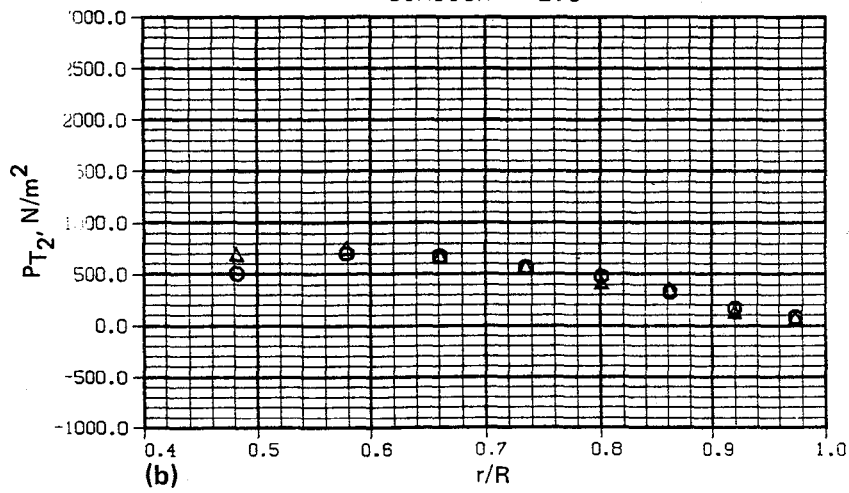
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 458. MASS FLOW: 37.45 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

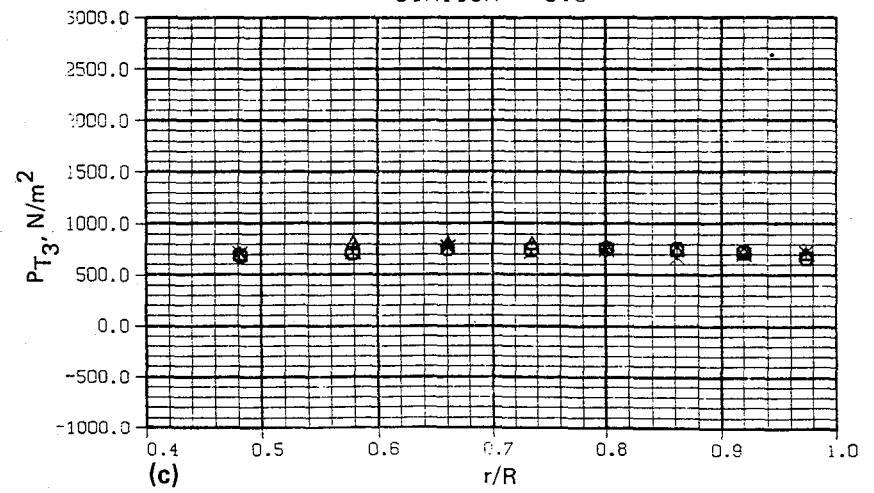


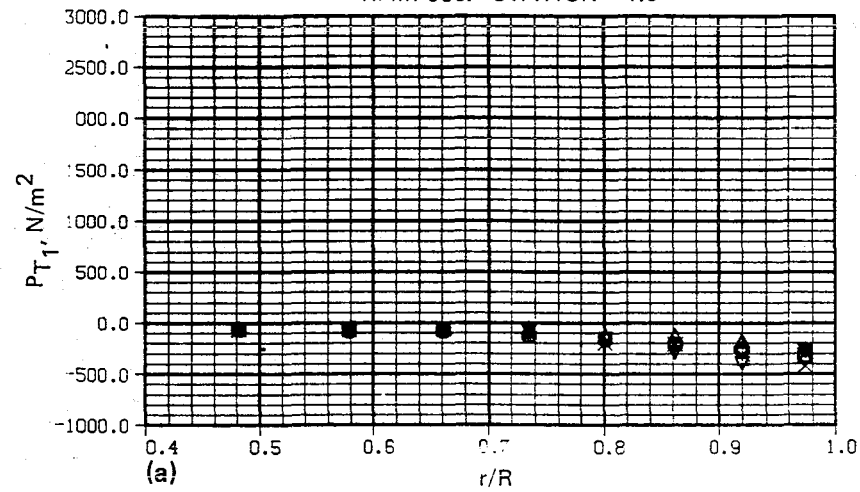
Figure D320.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

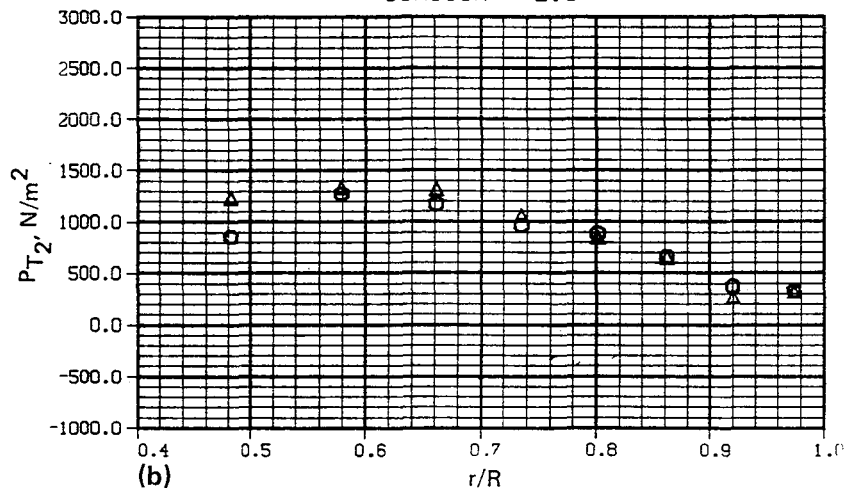
BLADE TYPE: 1. BLADE ANGLE: 35.4

RUN NO: 459. MASS FLOW: 52.23 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

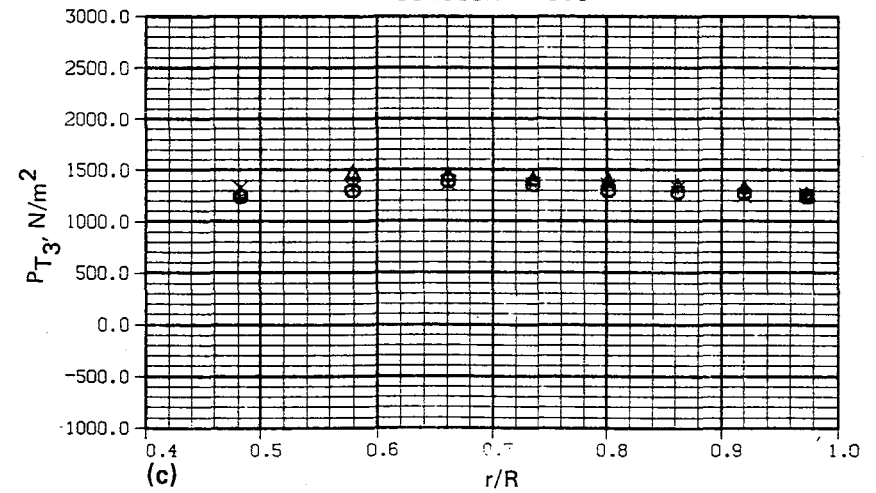


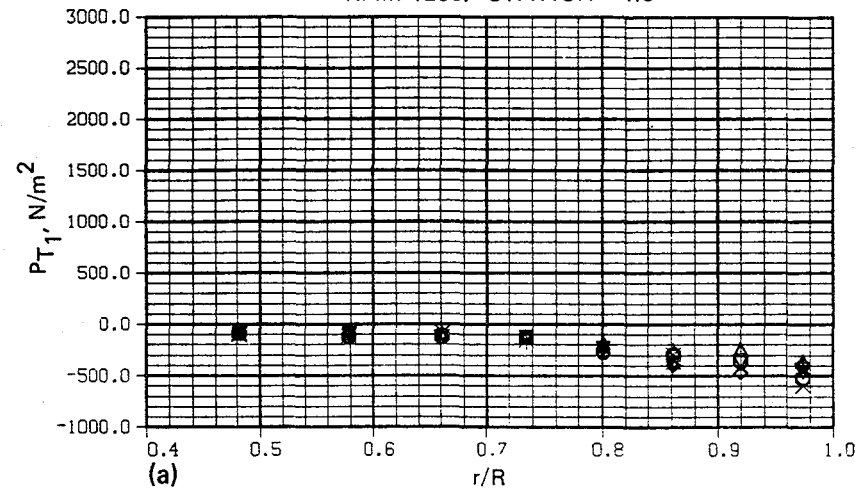
Figure D321.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

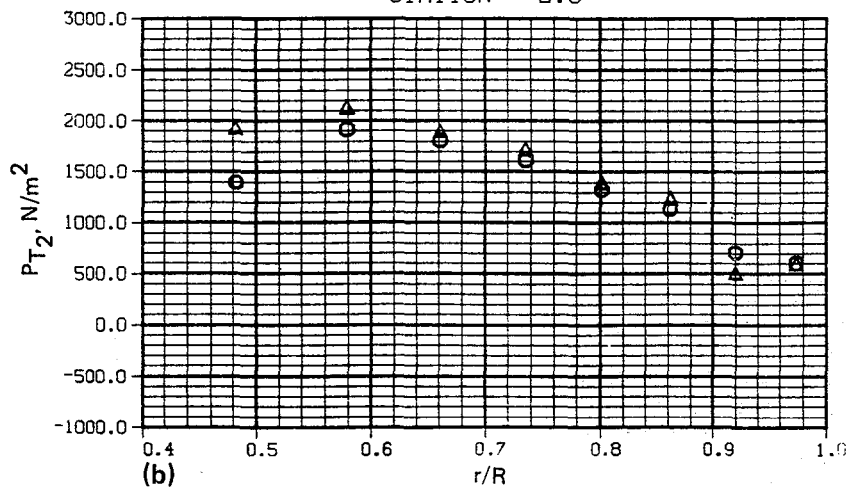
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 460. MASS FLOW: 69.99 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

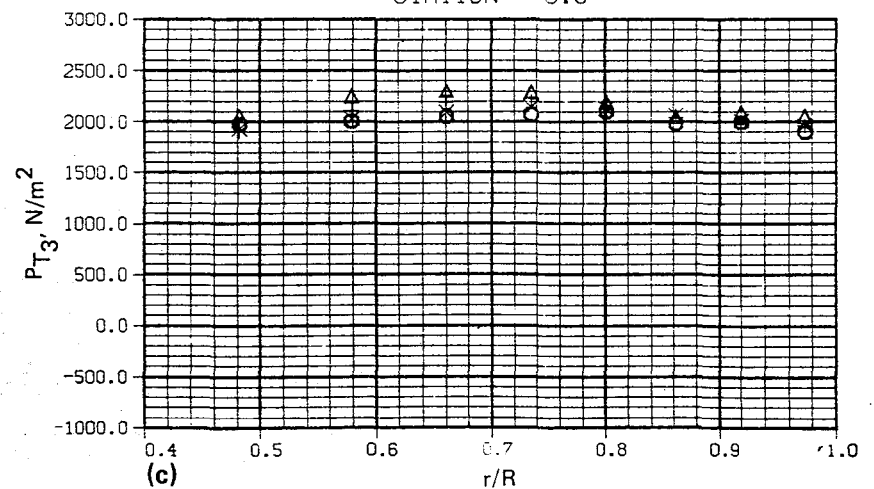


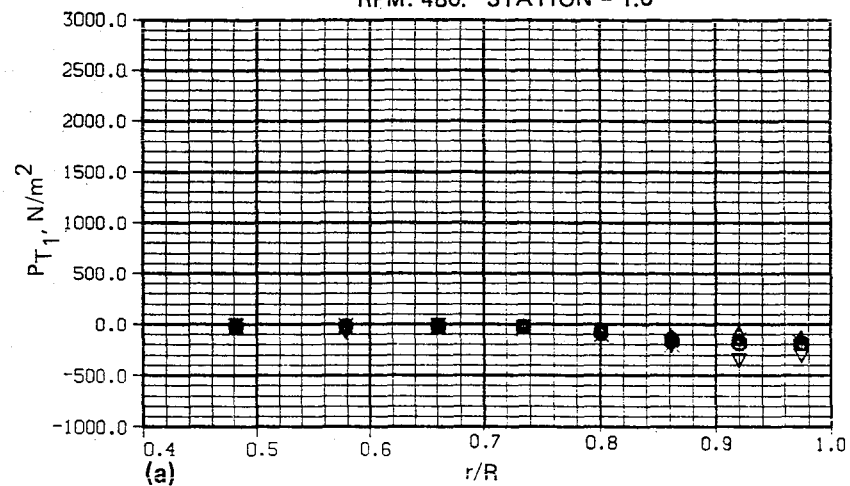
Figure D322.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

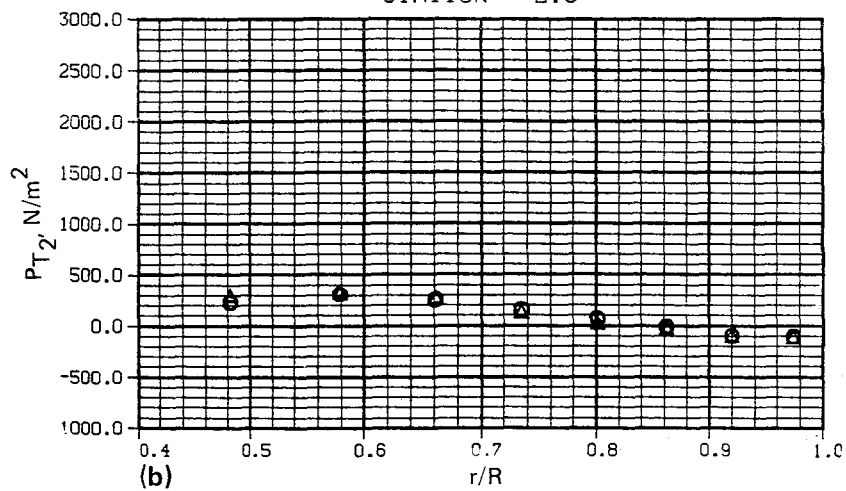
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 461. MASS FLOW: 12.47 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

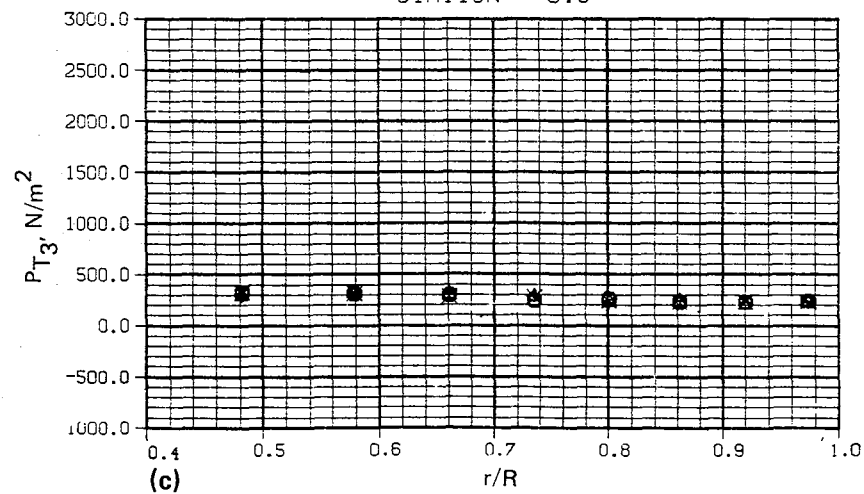


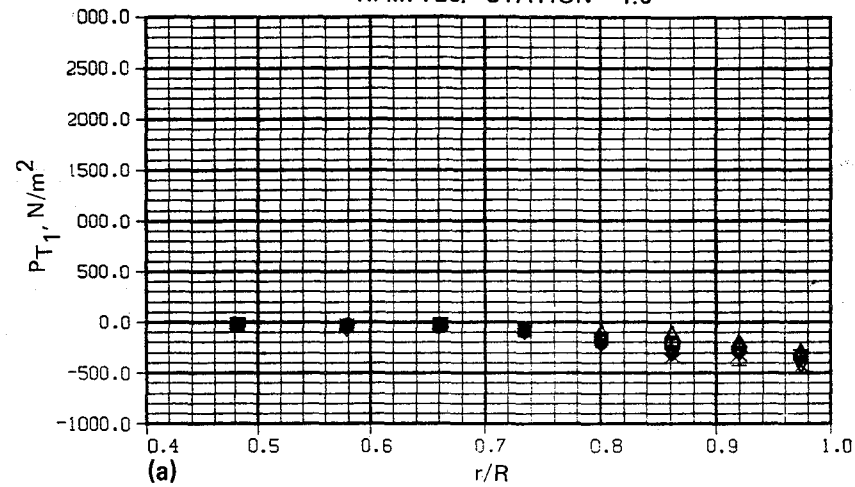
Figure D323.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

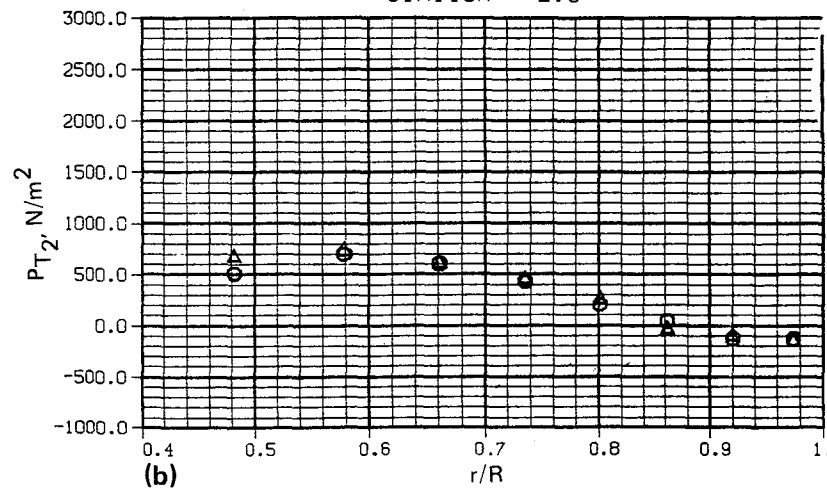
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 462. MASS FLOW: 20.86 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

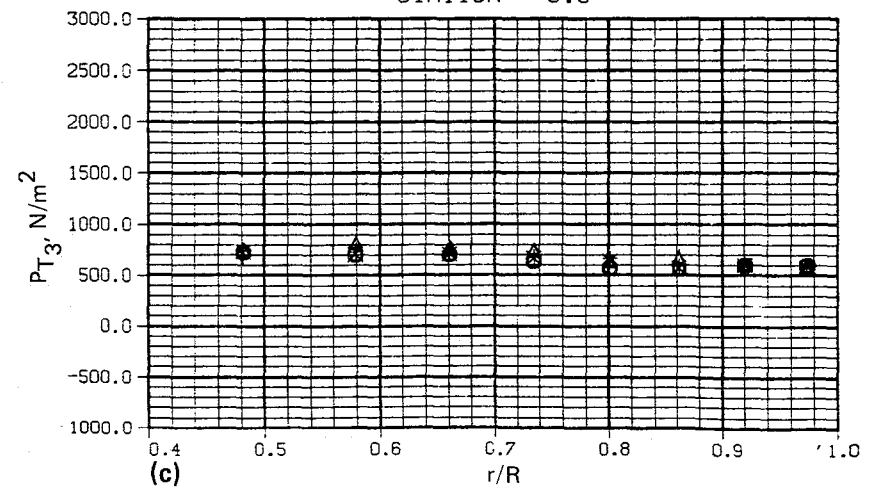


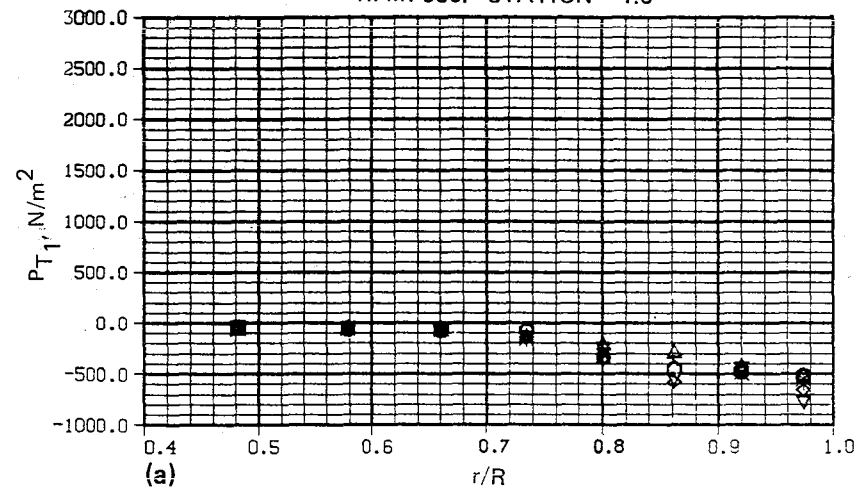
Figure D324.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

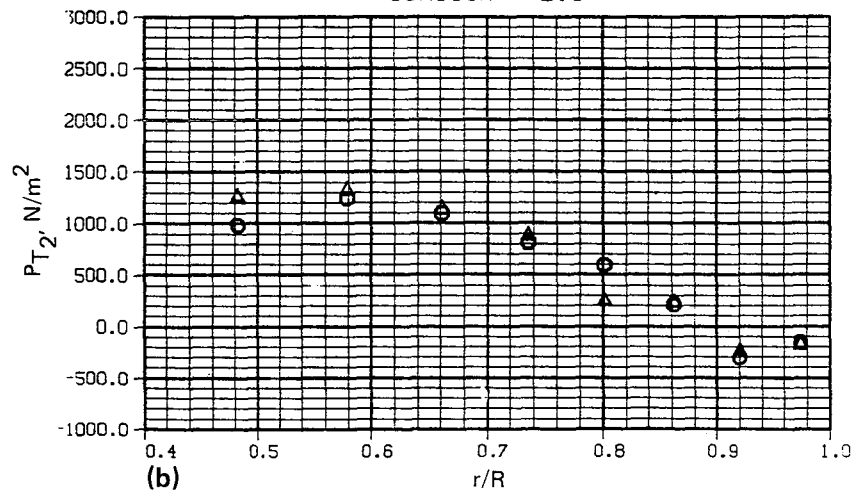
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 463. MASS FLOW: 29.06 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

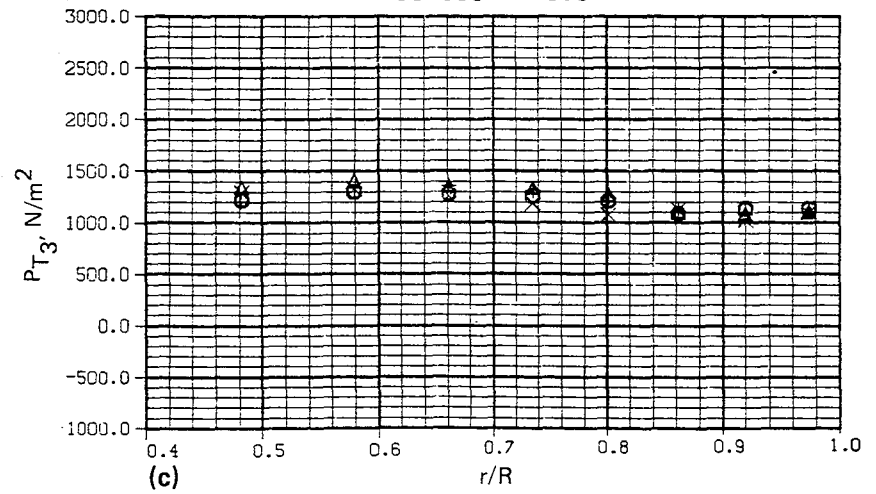


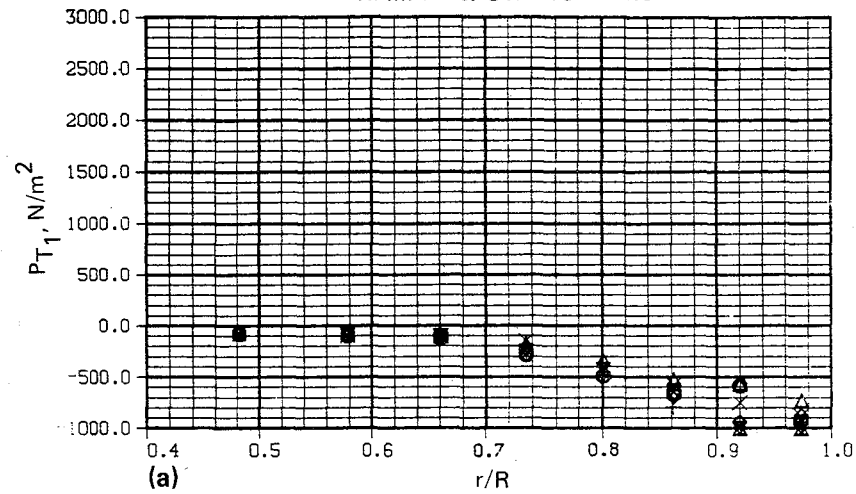
Figure D325.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

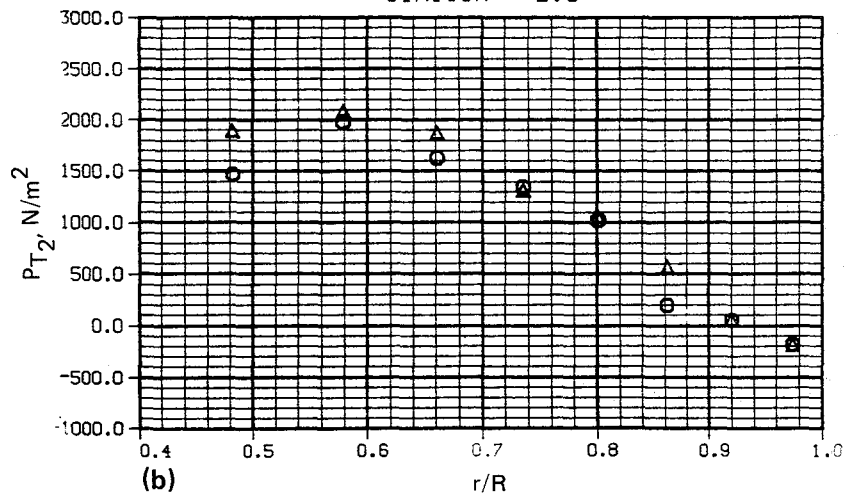
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 464. MASS FLOW: 38.19 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

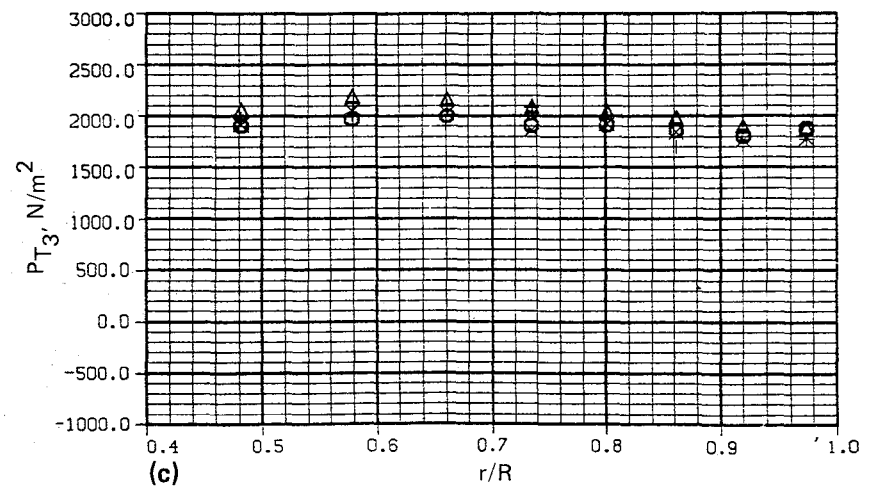


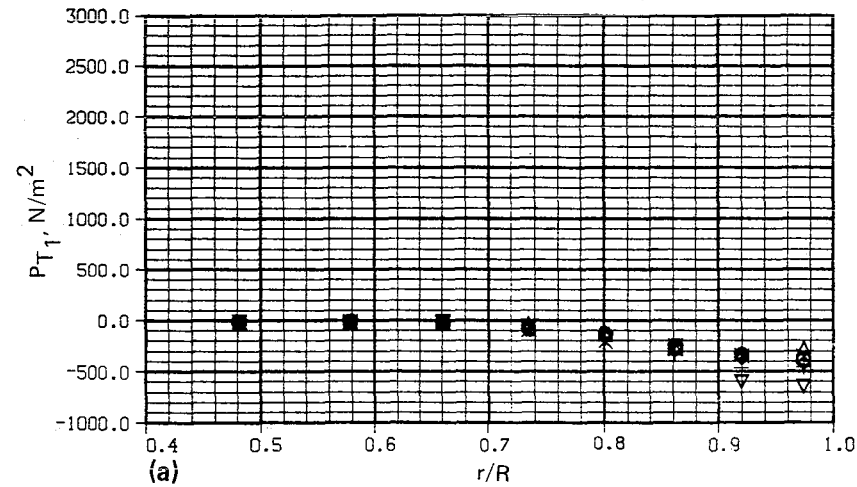
Figure D326.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

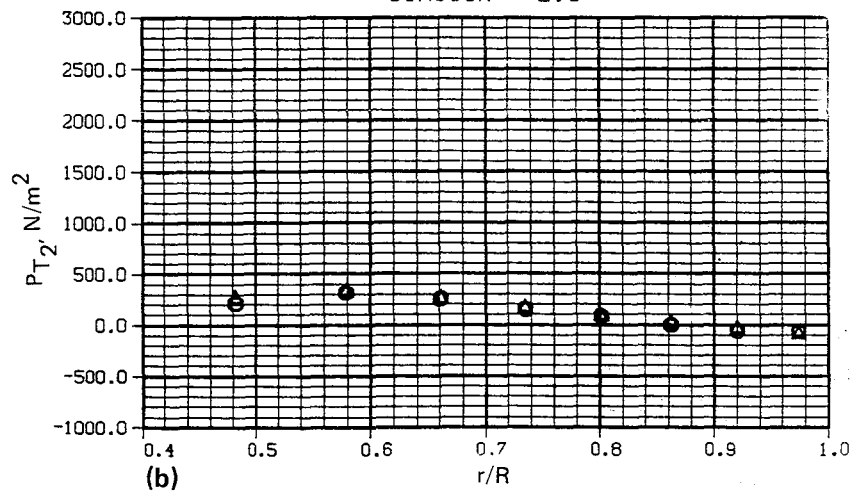
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 465. MASS FLOW: 8.11 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

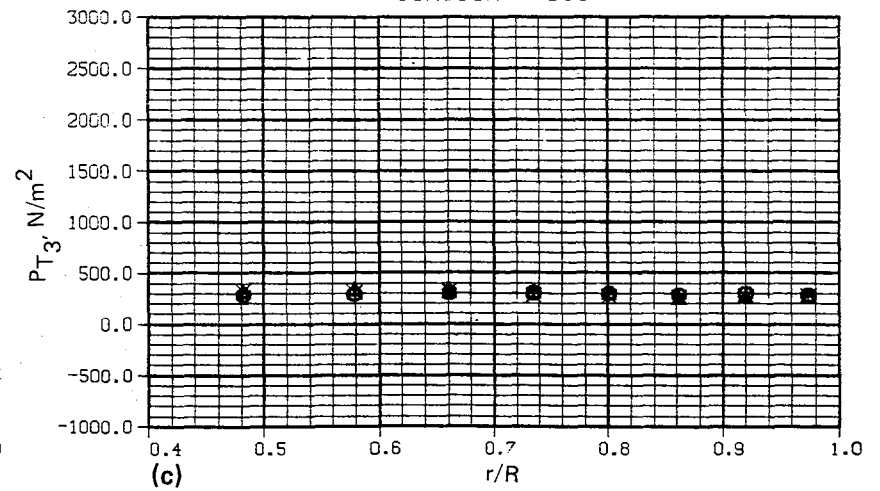


Figure D327.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 466. MASS FLOW: 20.48 slugs/sec

RPM: 720. STATION = 1.0

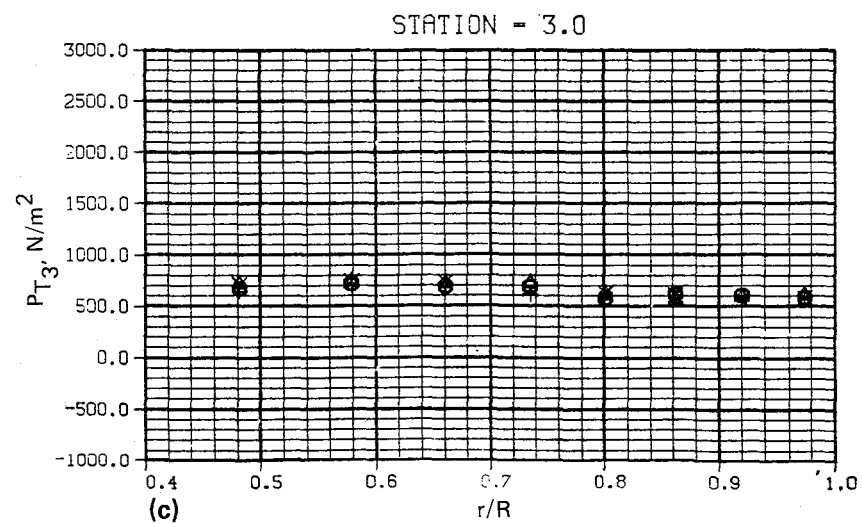
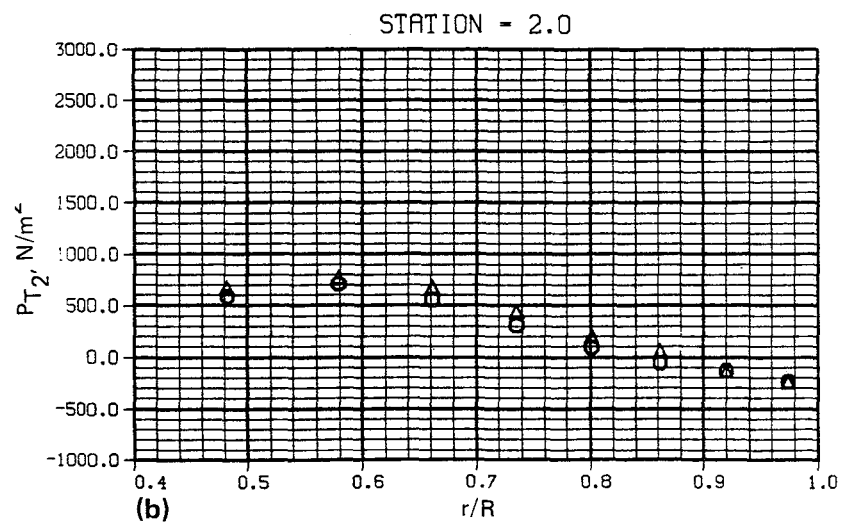
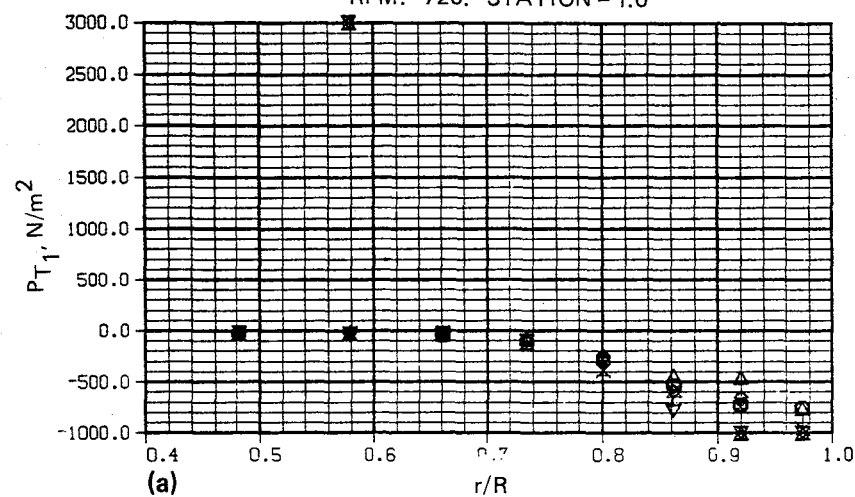


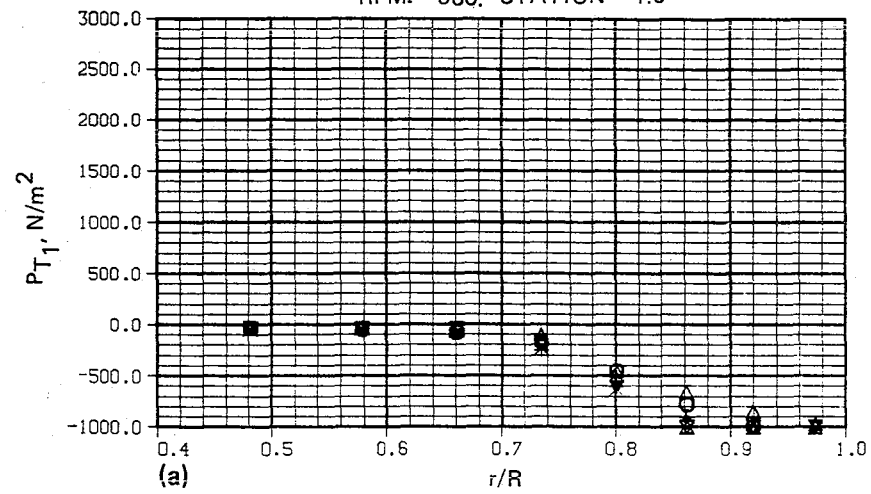
Figure D328.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

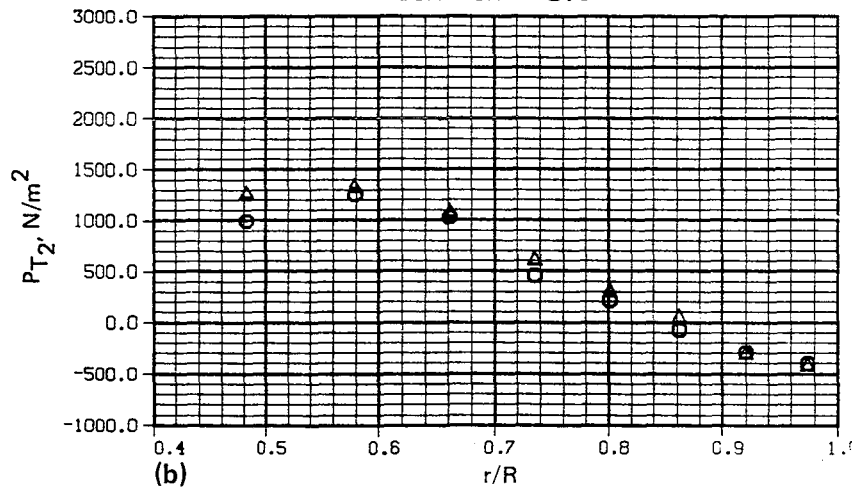
BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 467. MASS FLOW: 21.31 slugs/sec

RPM: 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

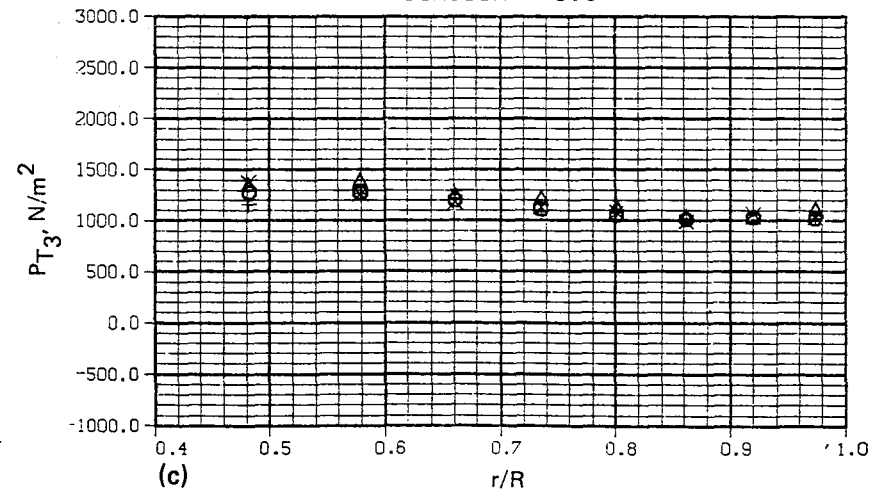


Figure D329.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 35.4

RUN NO: 468. MASS FLOW: 27.41 slugs/sec

RPM: 1200. STATION = 1.0

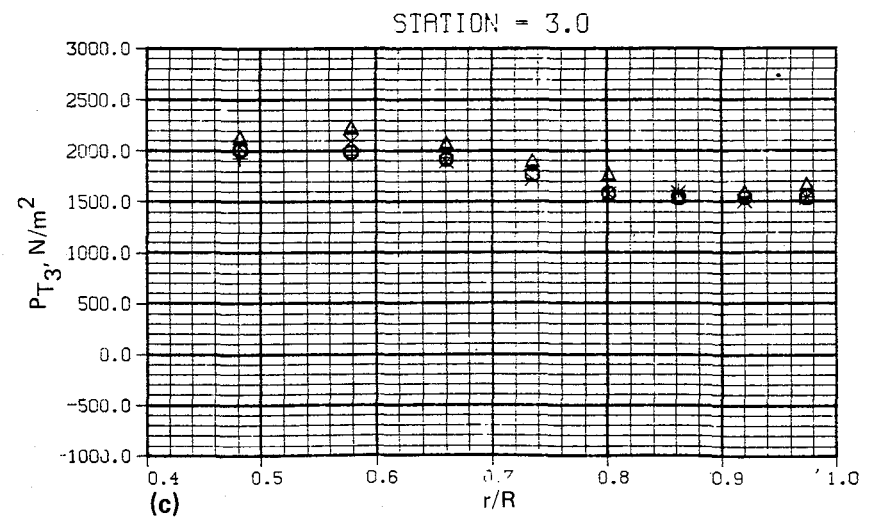
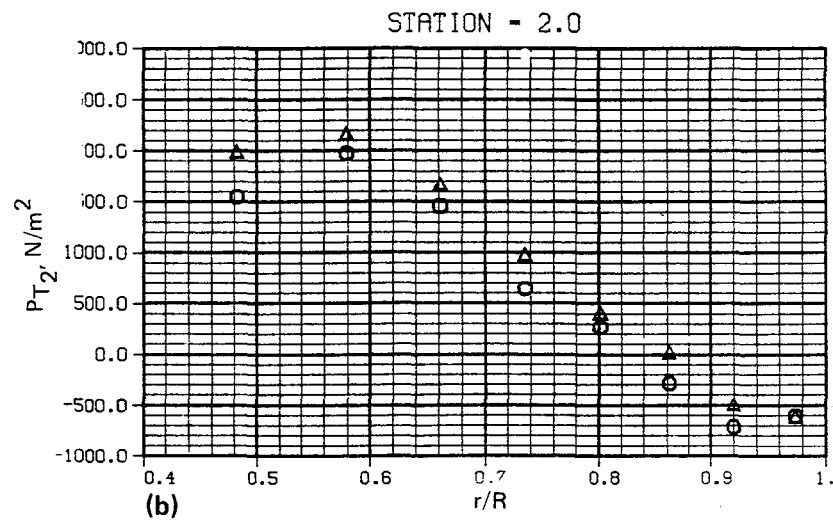
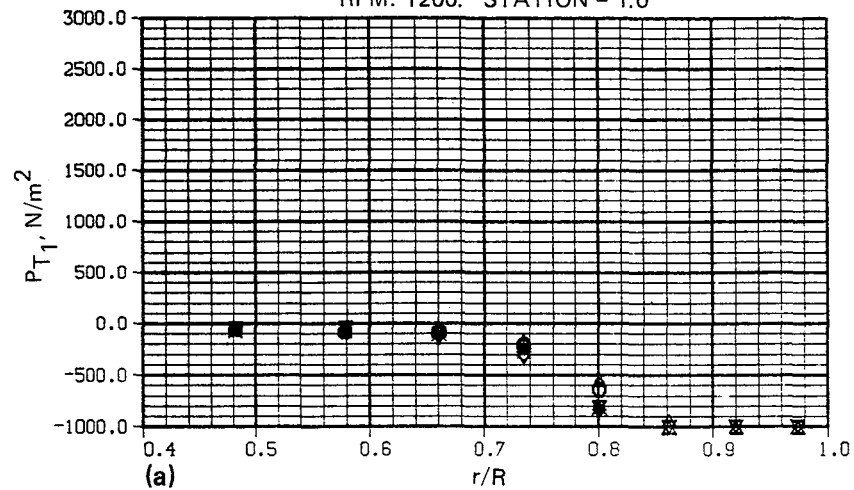


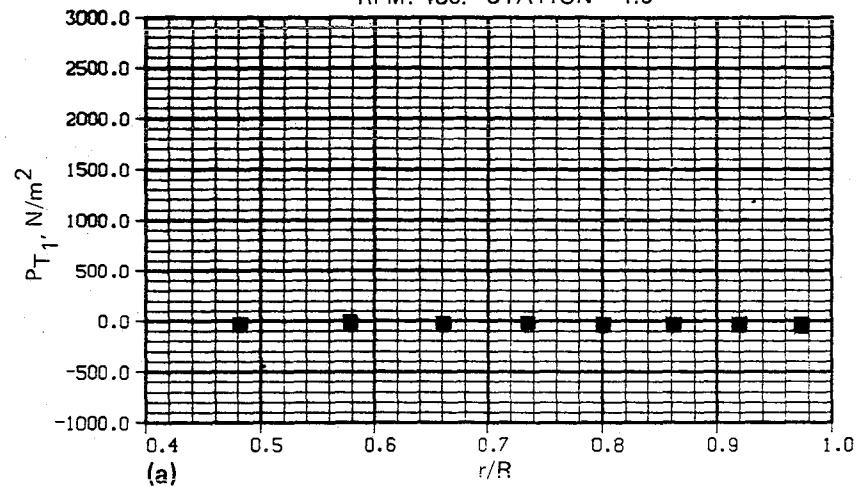
Figure D330.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

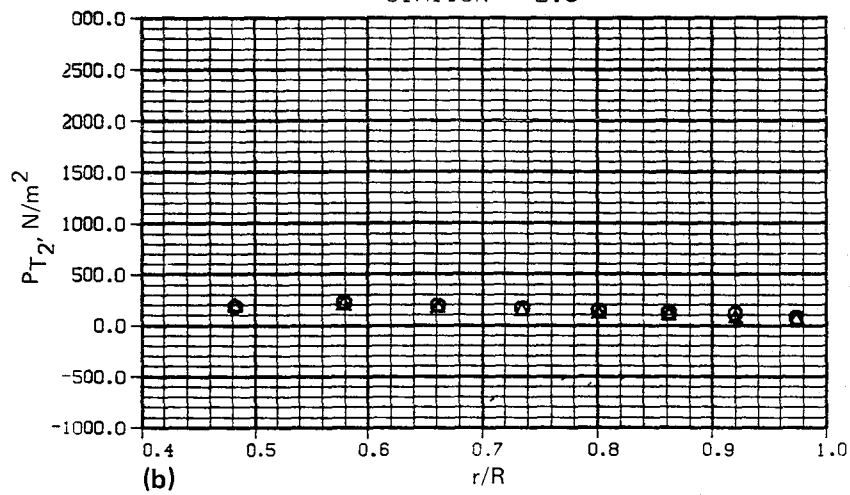
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 473. MASS FLOW: 42.36 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

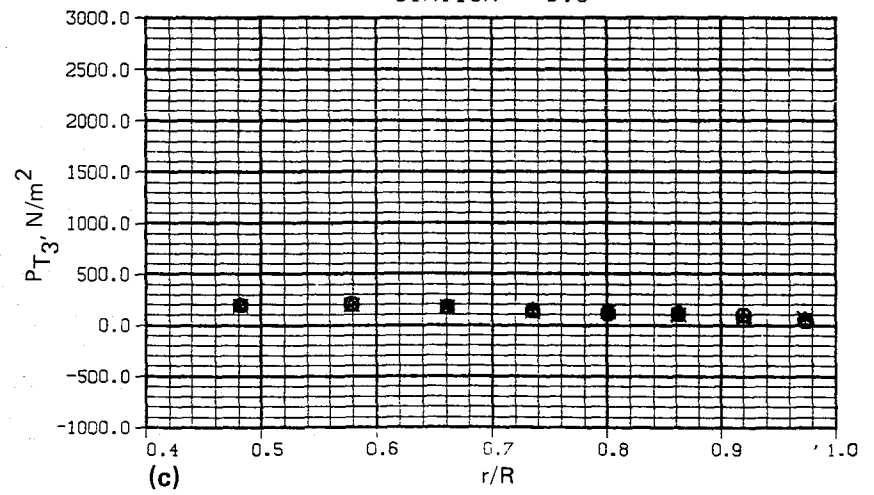


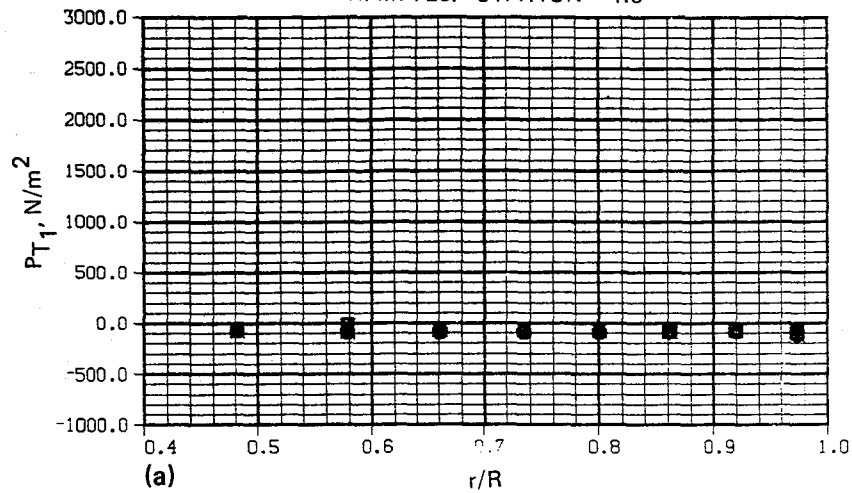
Figure D331.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

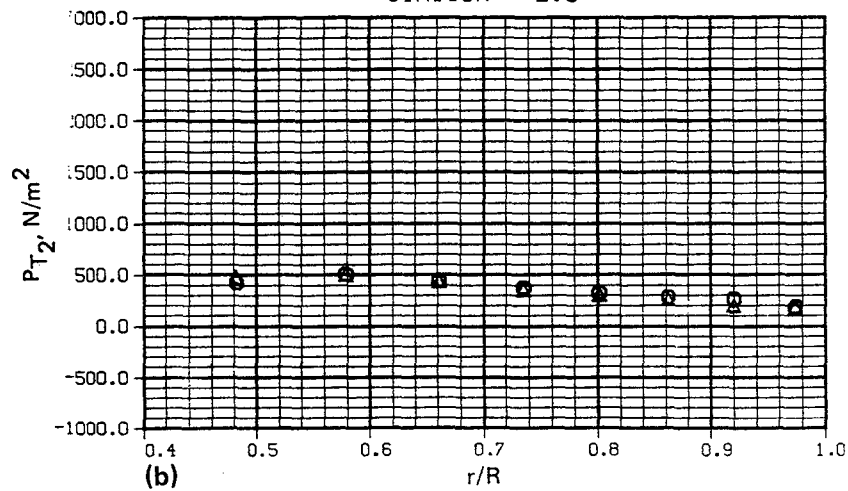
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 474. MASS FLOW: 64.12 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

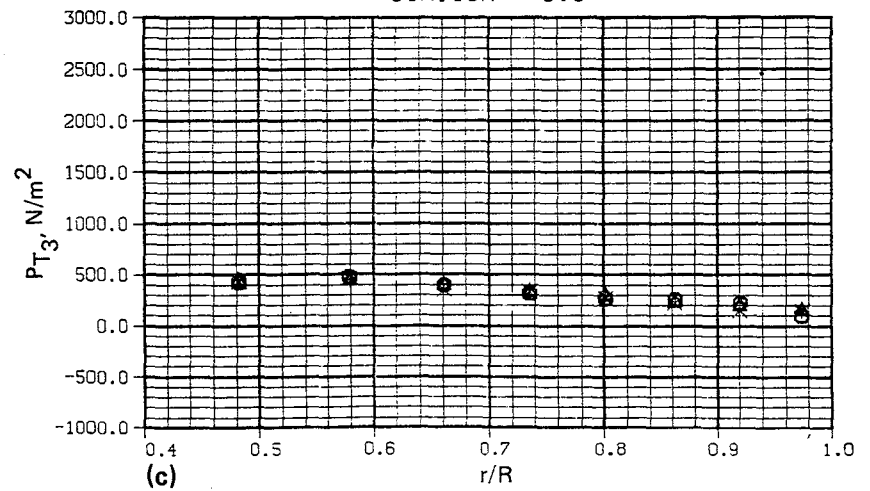


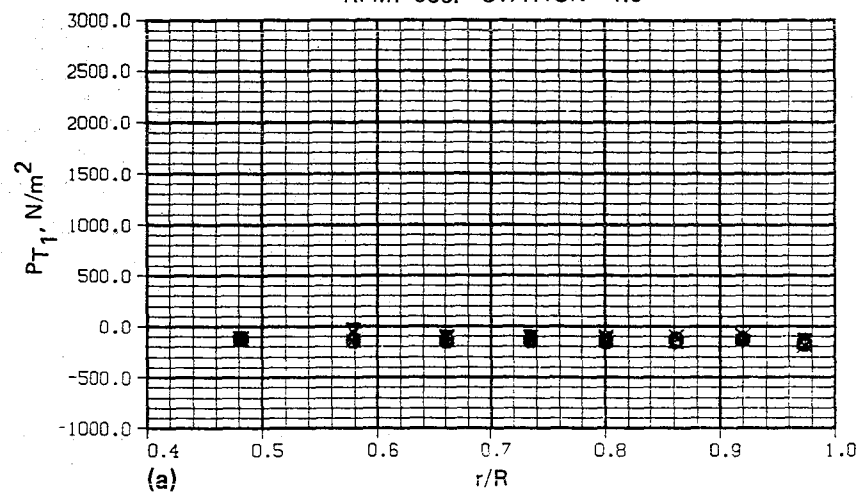
Figure D332.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

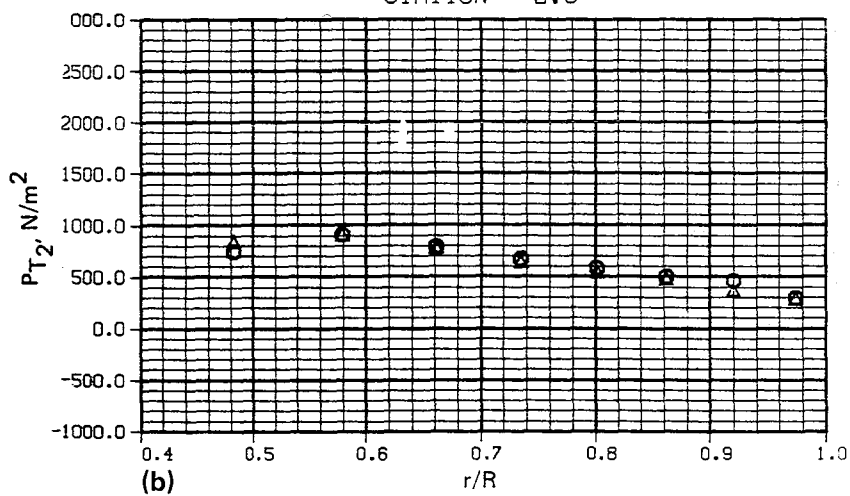
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 475. MASS FLOW: 86.53 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

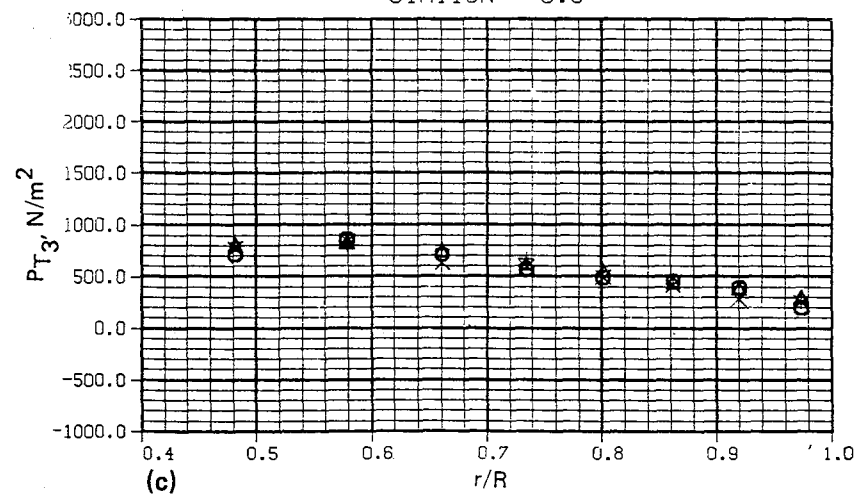


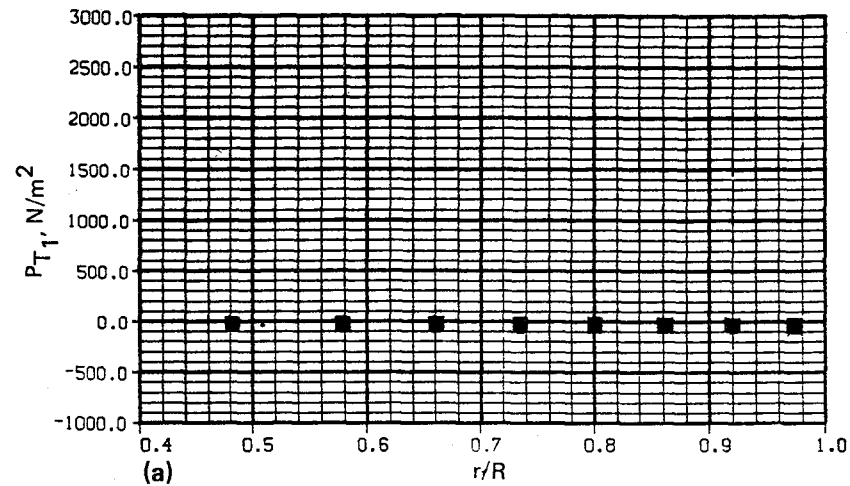
Figure D333.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

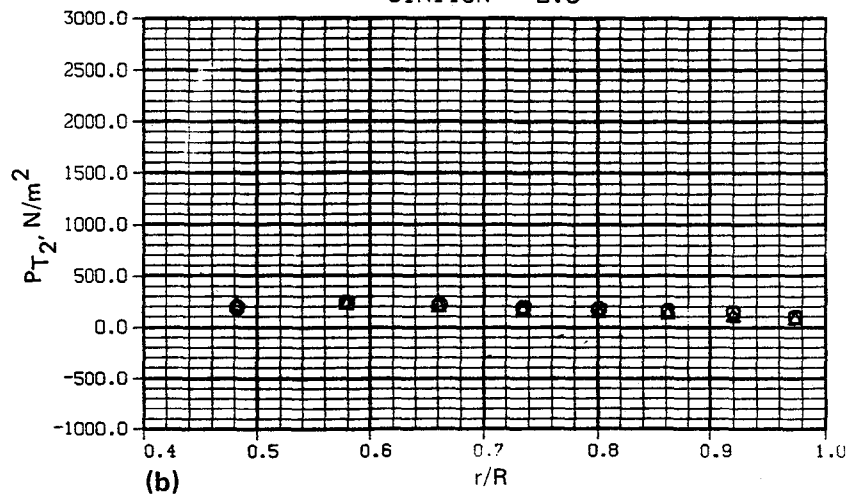
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 477. MASS FLOW: 40.76 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

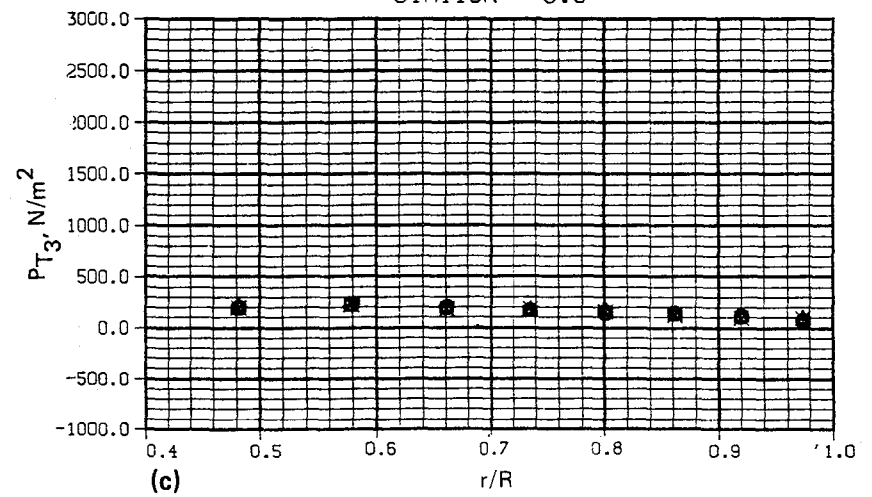
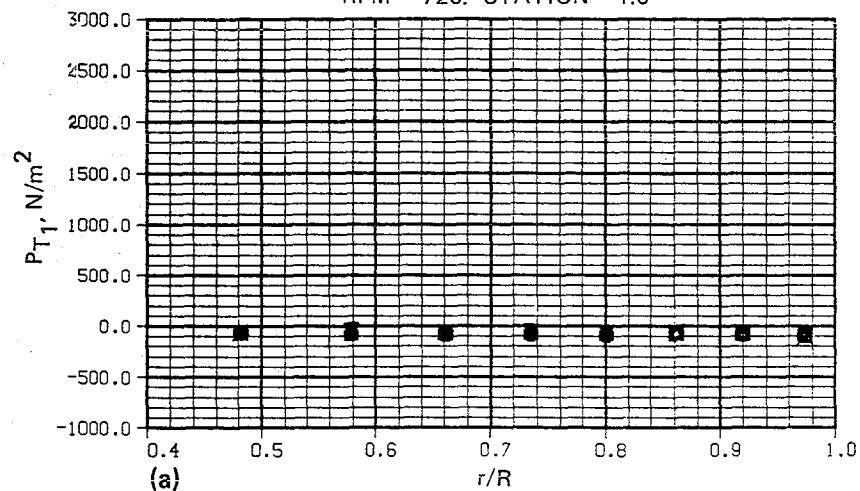
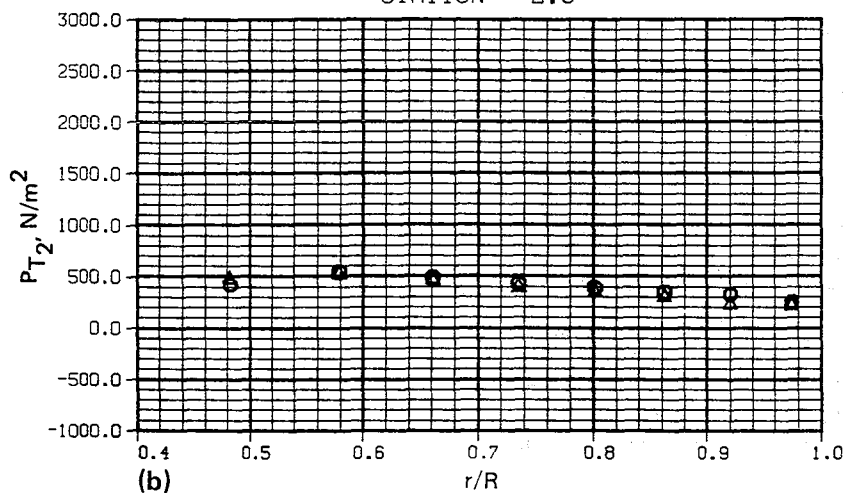


Figure D334.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 24.5
 RUN NO: 478. MASS FLOW: 61.71 slugs/sec
 RPM = 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

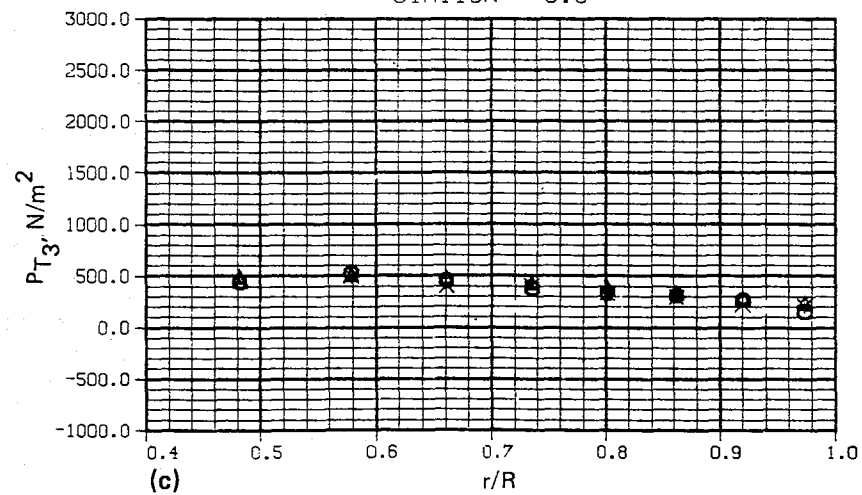


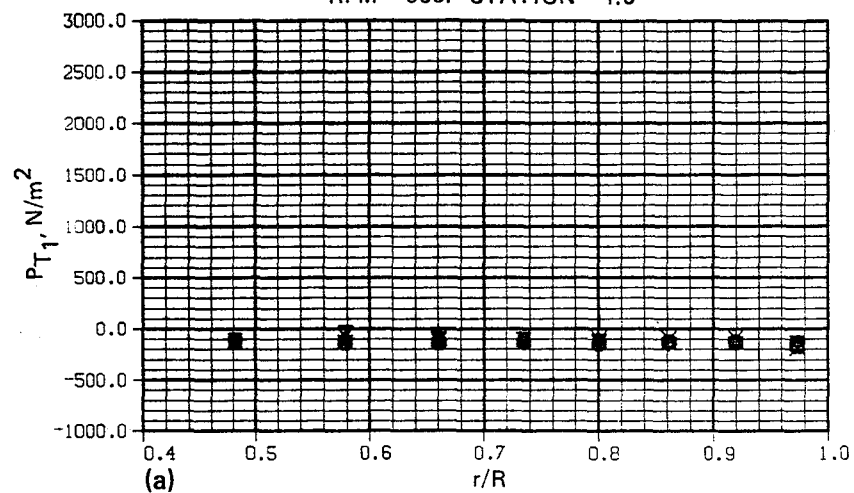
Figure D335.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

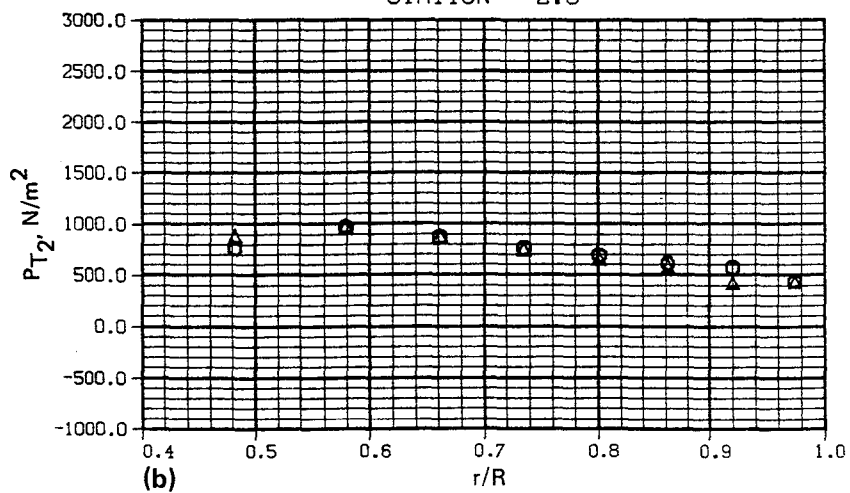
BLADE TYPE: 2, BLADE ANGLE: 24.5

RUN NO: 479. MASS FLOW: 83.44 slugs/sec

RPM = 960. STATION = 1.0



STATION = 2.0



STATION = 3.0

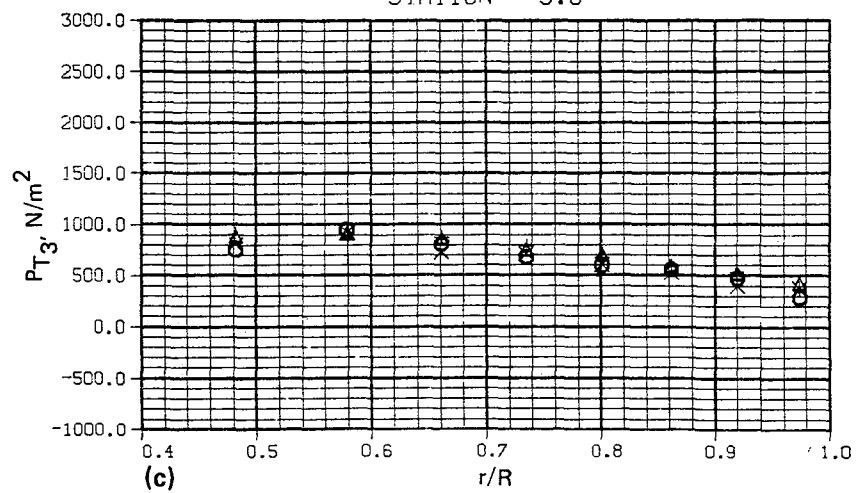


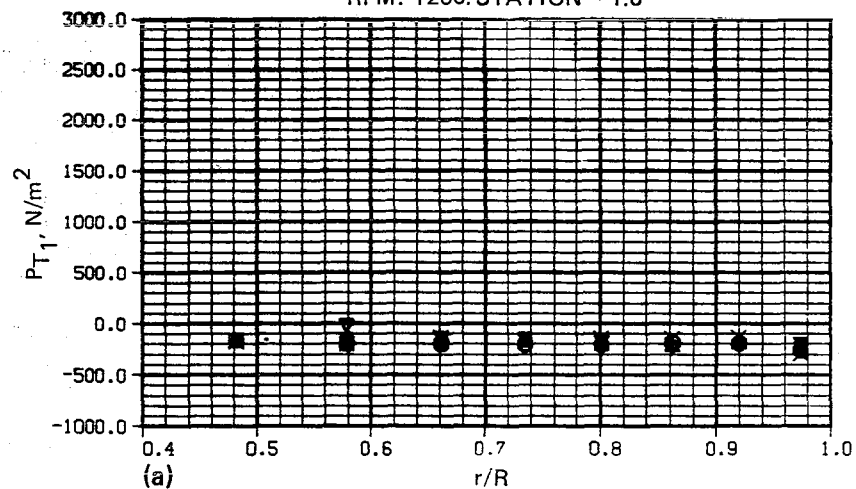
Figure D336.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

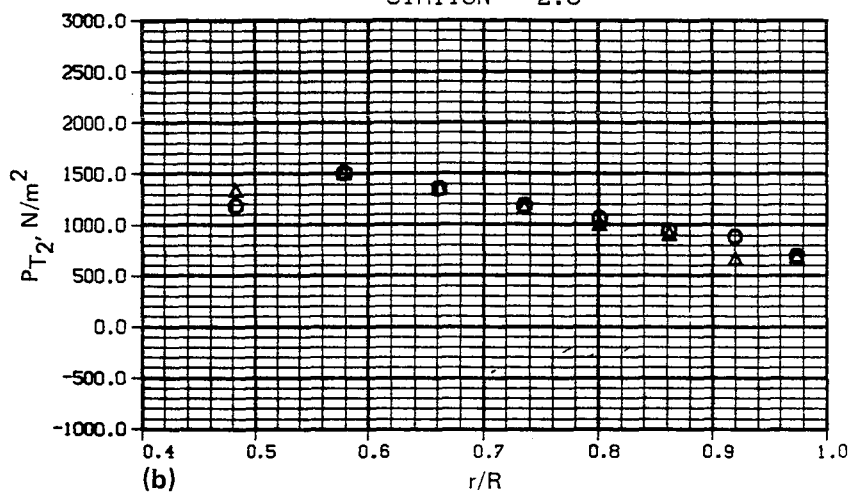
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 480. MASS FLOW: 104.38 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

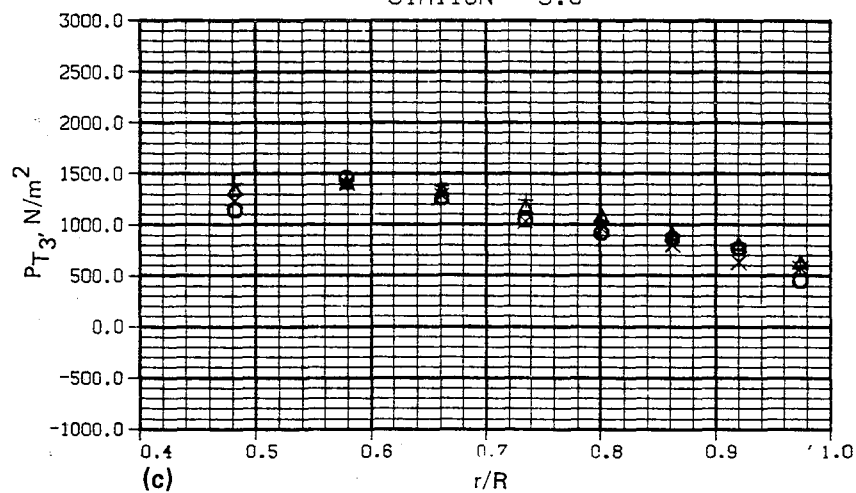


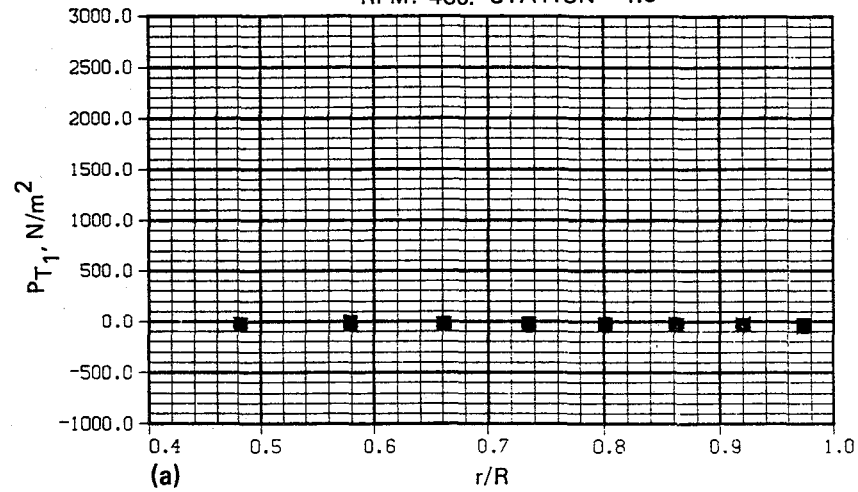
Figure D337.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

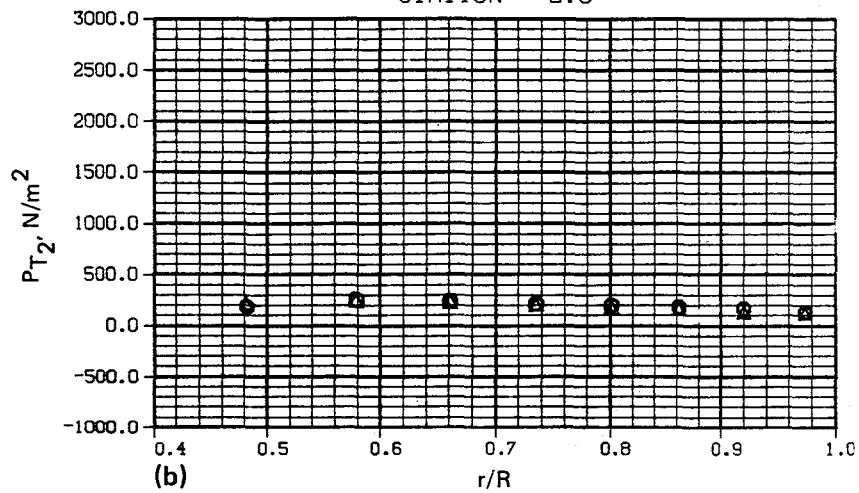
BLADE TYPE: 2, BLADE ANGLE: 24.5

RUN NO: 481, MASS FLOW: 39.16 slugs/sec

RPM: 480, STATION = 1.0



STATION = 2.0



STATION = 3.0

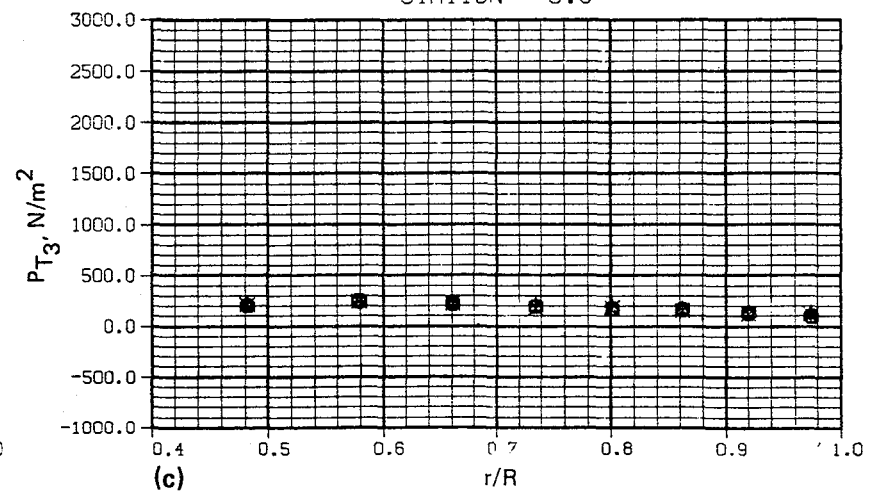


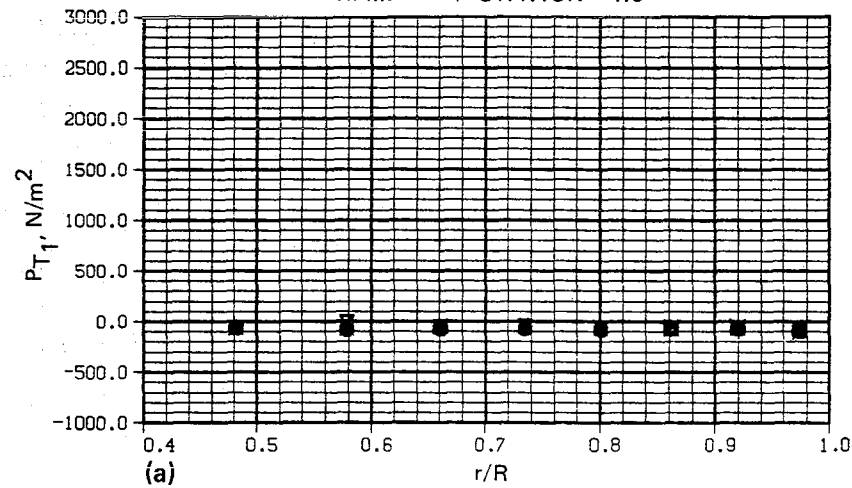
Figure D338.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

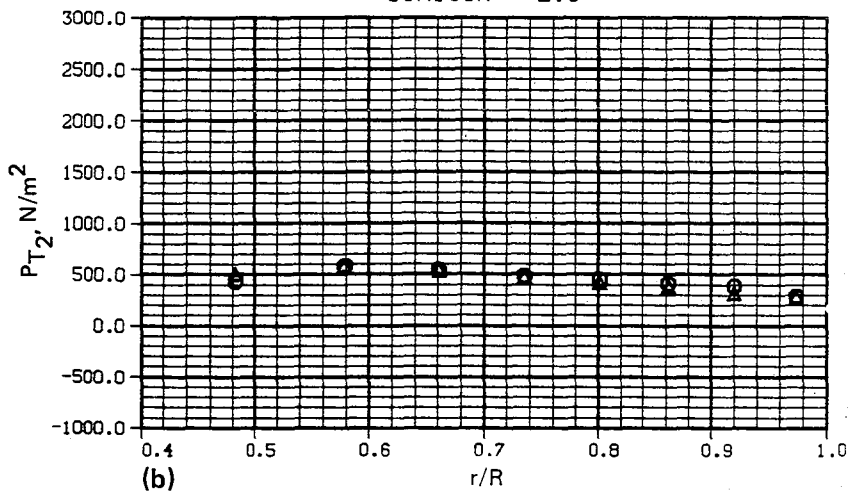
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 482. MASS FLOW: 59.94 slugs/sec

RPM: 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

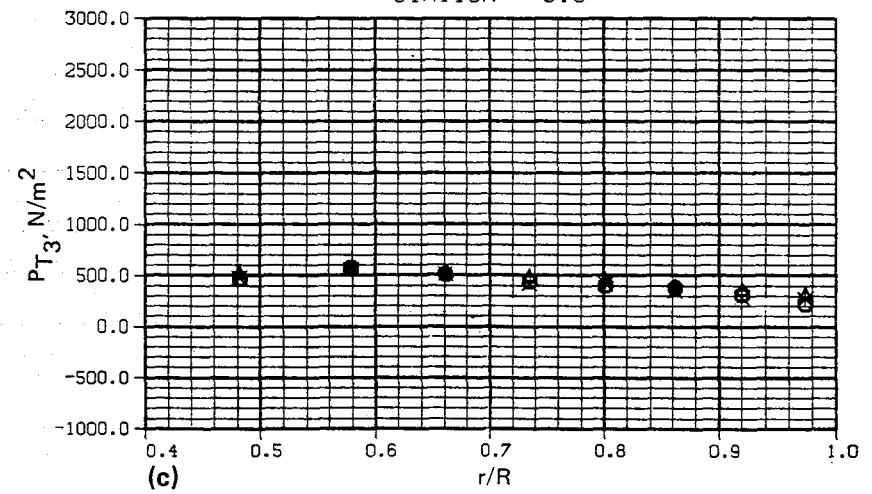
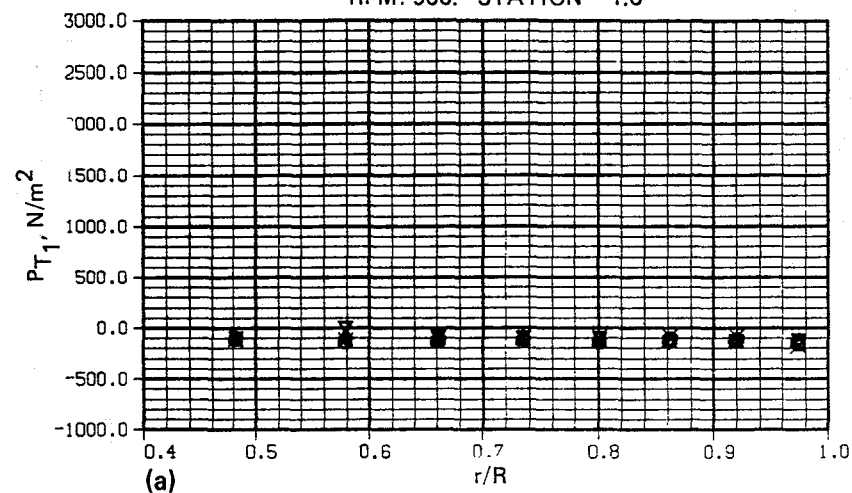
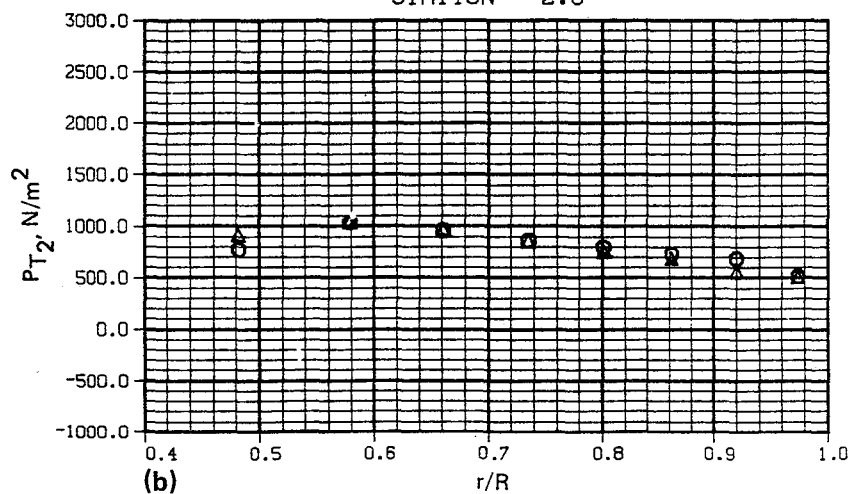


Figure D339.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 24.5
 RUN NO: 483. MASS FLOW: 80.59 slugs/sec
 RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

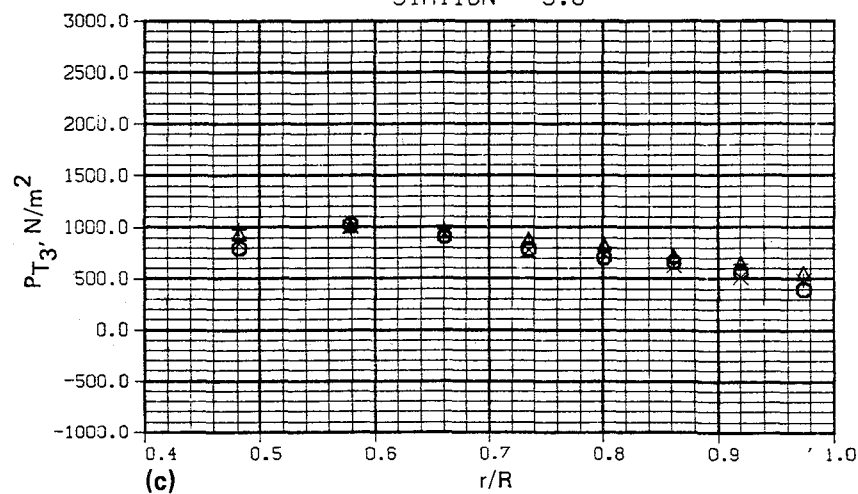


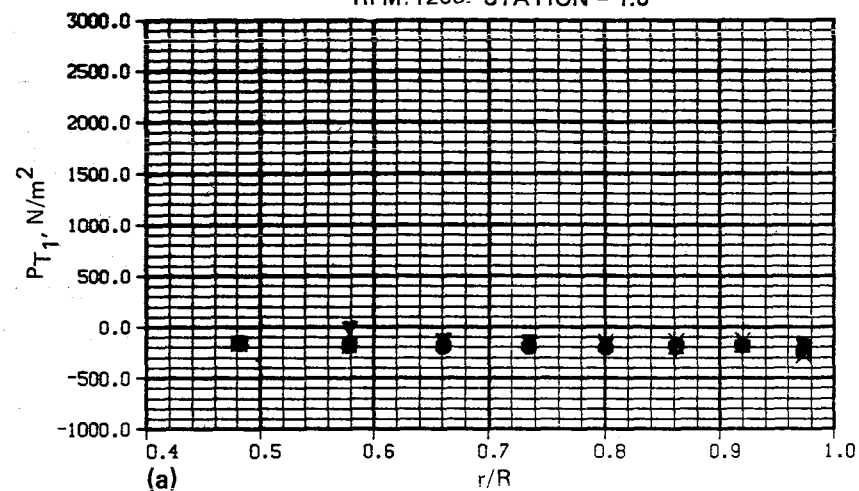
Figure D340.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

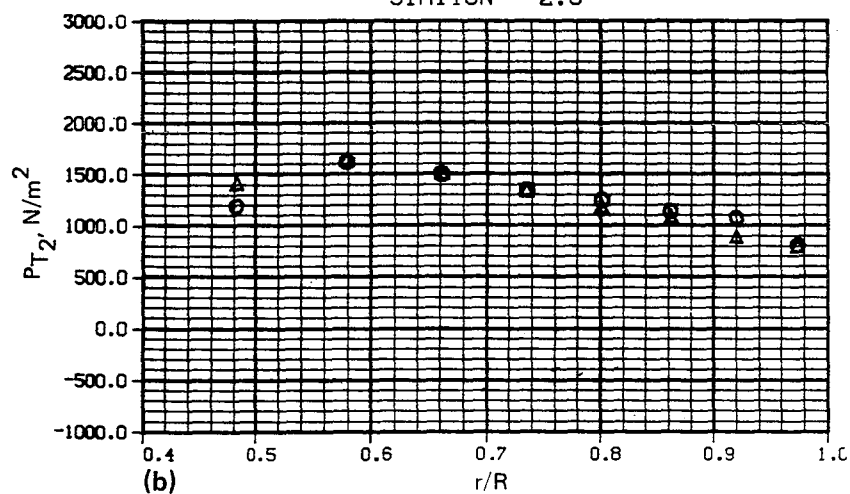
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 484. MASS FLOW 101.47 slugs/sec

RPM: 1200. STATION = 1.0



STATION = 2.0



STATION = 3.0

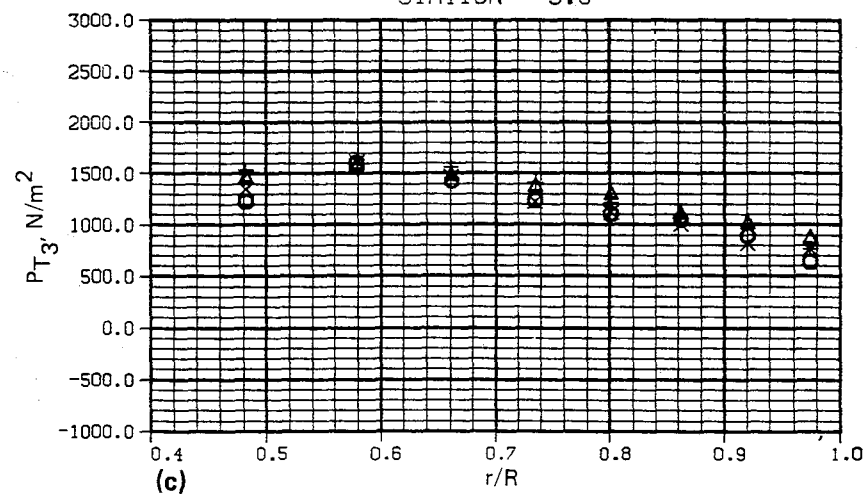


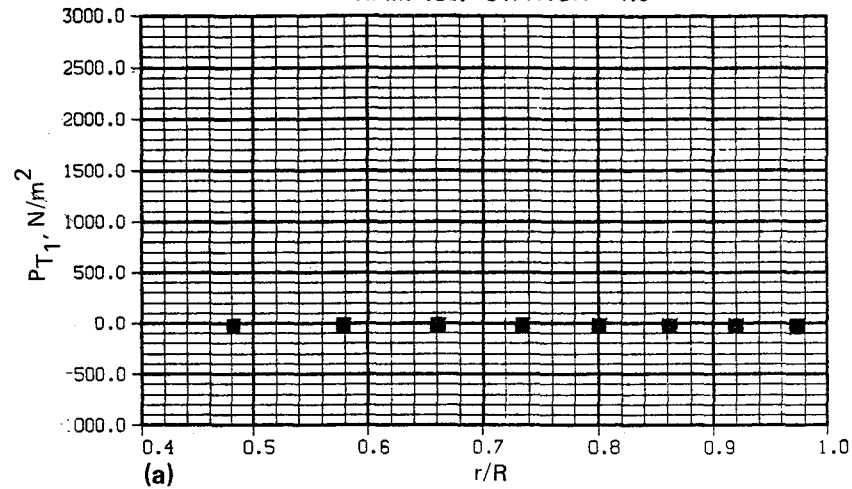
Figure D341.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

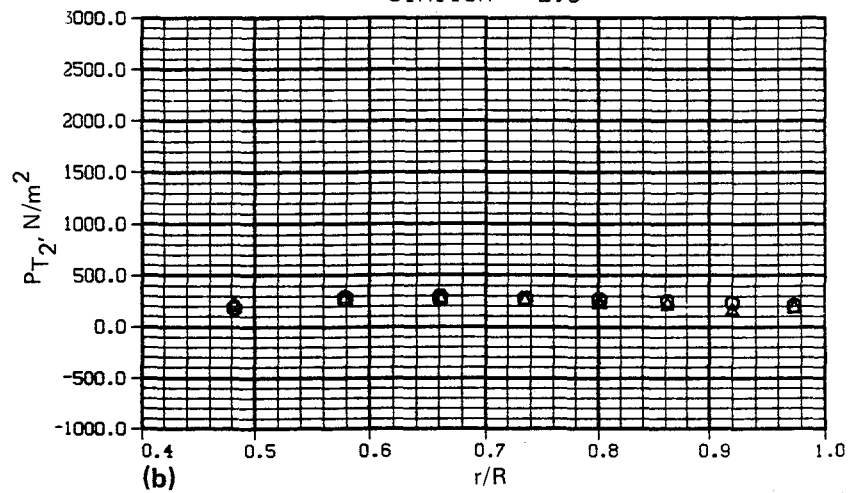
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 485. MASS FLOW: 34.96 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

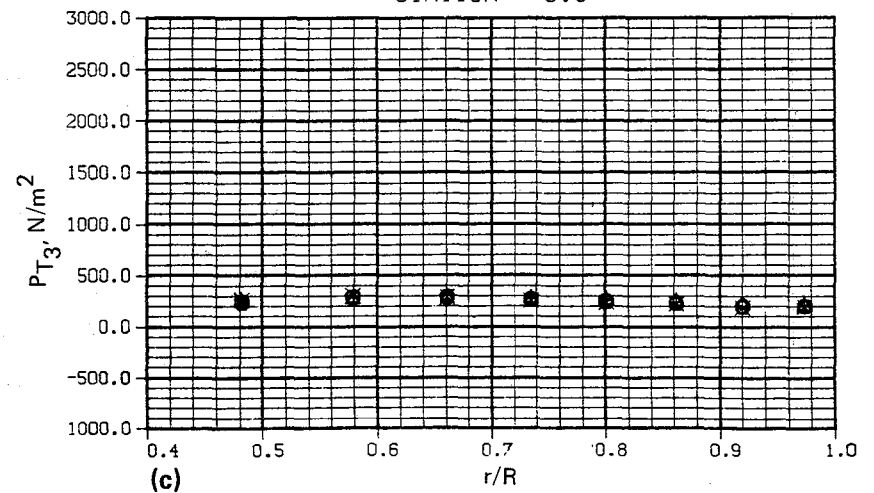
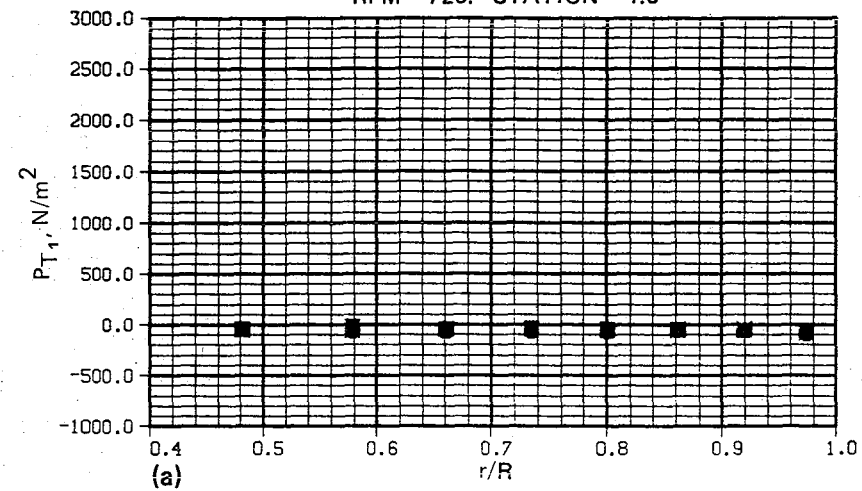
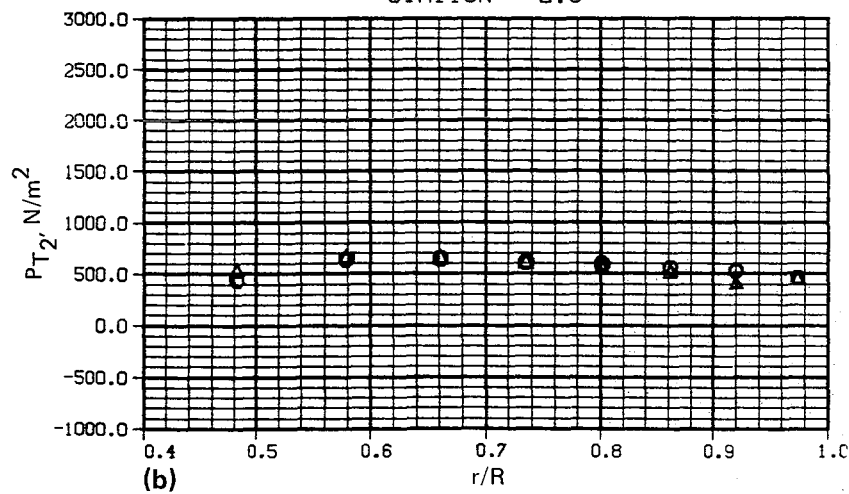


Figure D342.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 24.5
 RUN NO: 486. MASS FLOW: 53.50 slugs/sec
 RPM = 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

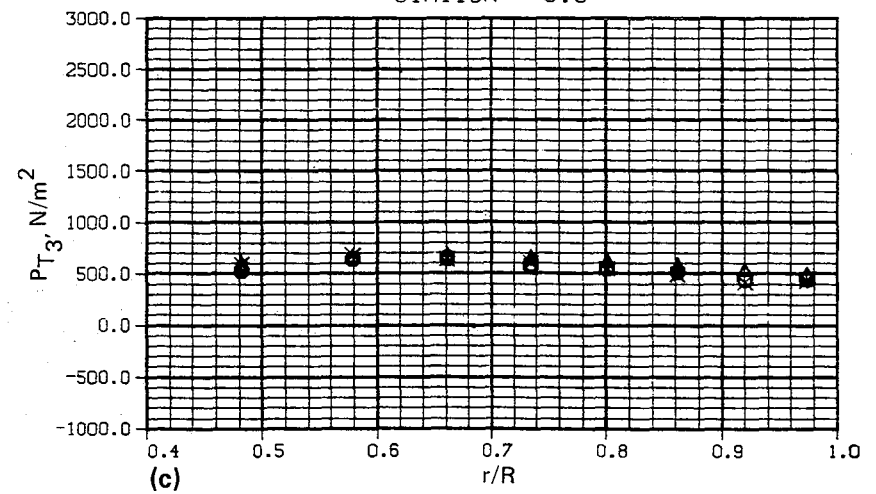


Figure D343.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 487, MASS FLOW: 72.60 slugs/sec

RPM: 960. STATION = 1.0

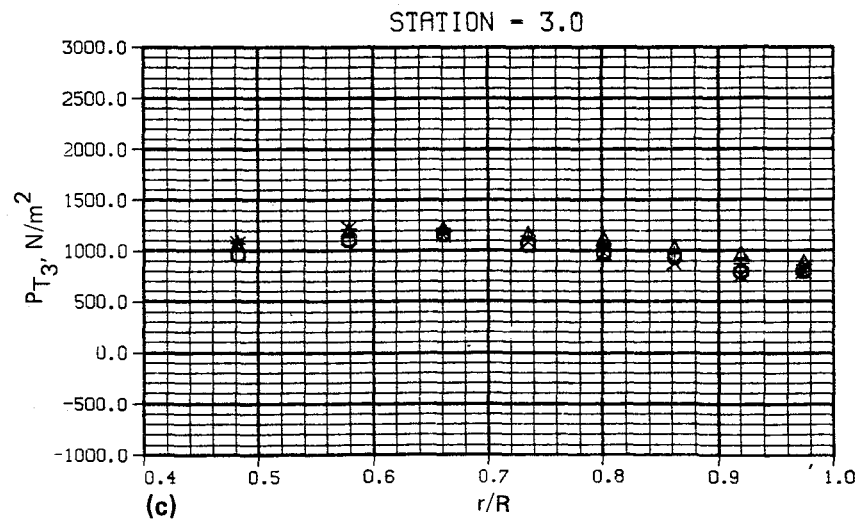
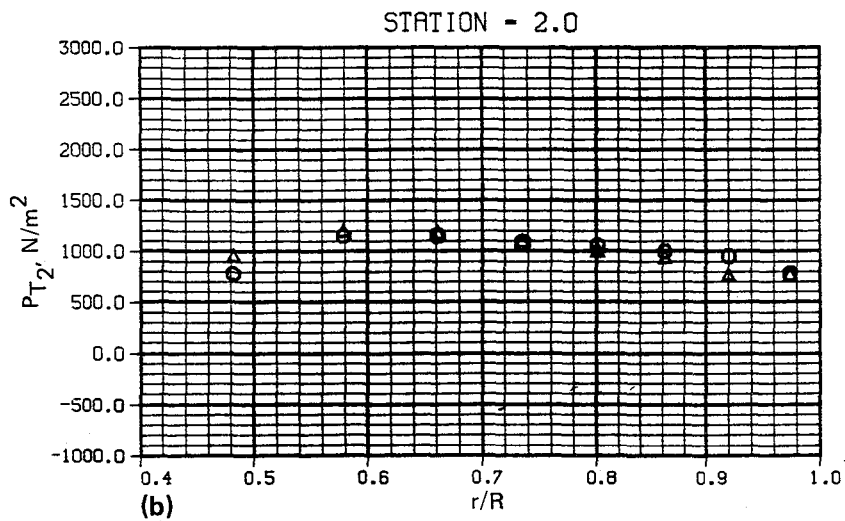
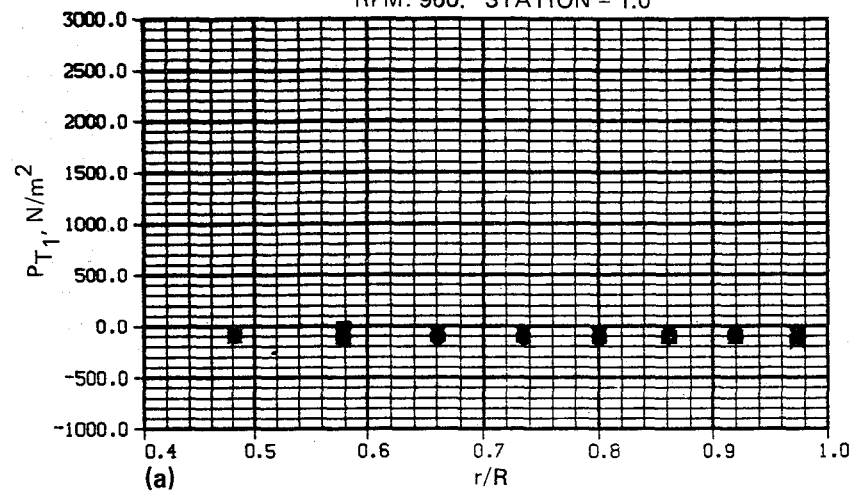
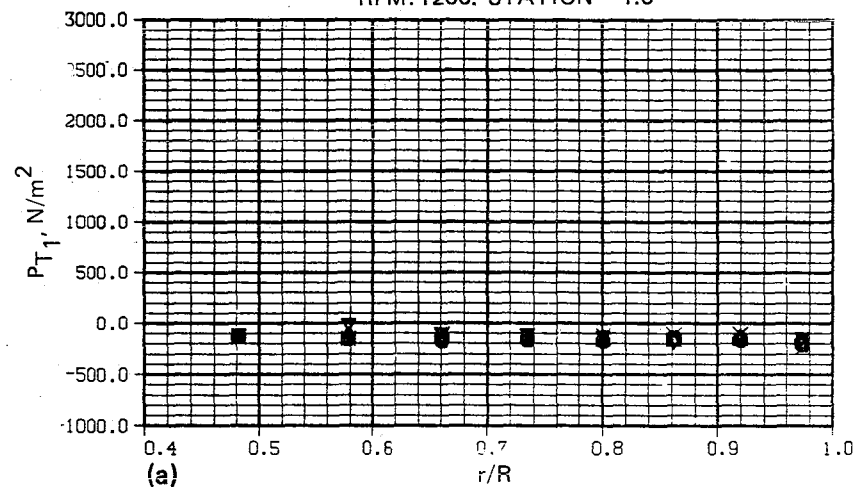
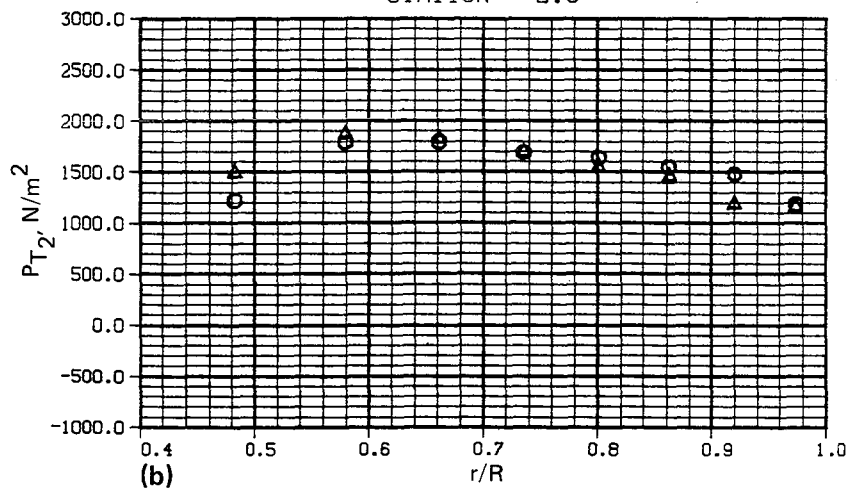


Figure D344.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 24.5
 RUN NO: 488. MASS FLOW: 91.57 slugs/sec
 RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

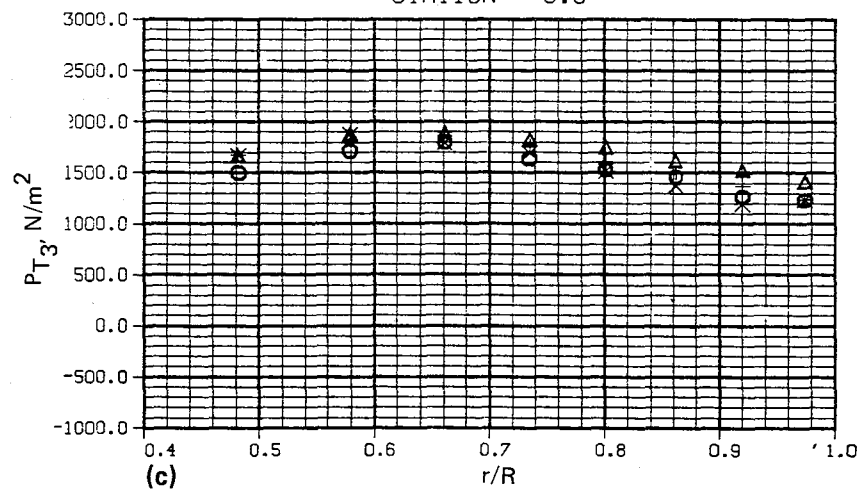


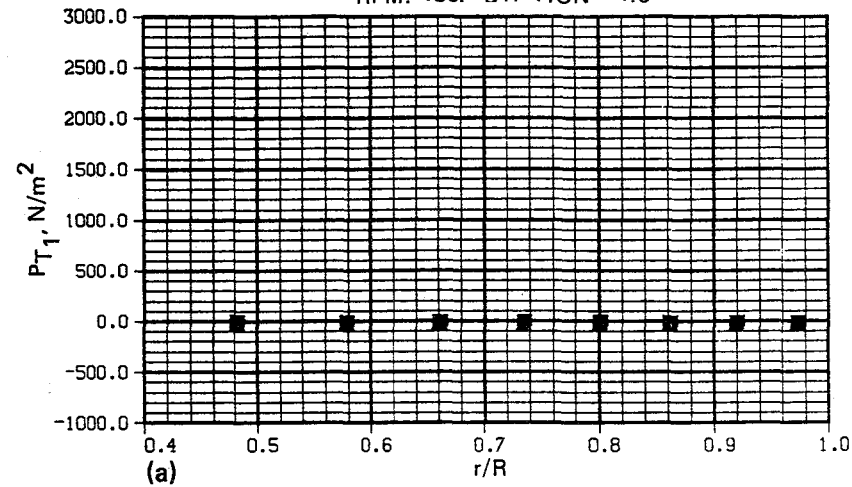
Figure D345.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

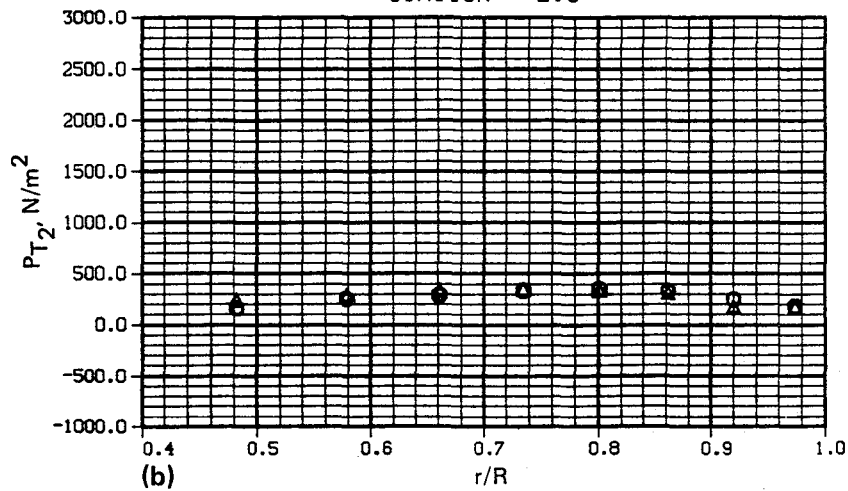
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 489. MASS FLOW: 25.72 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

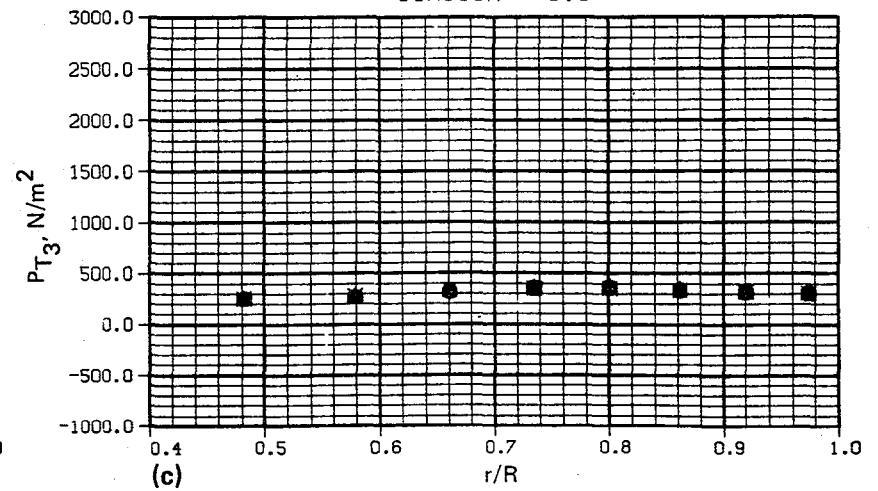


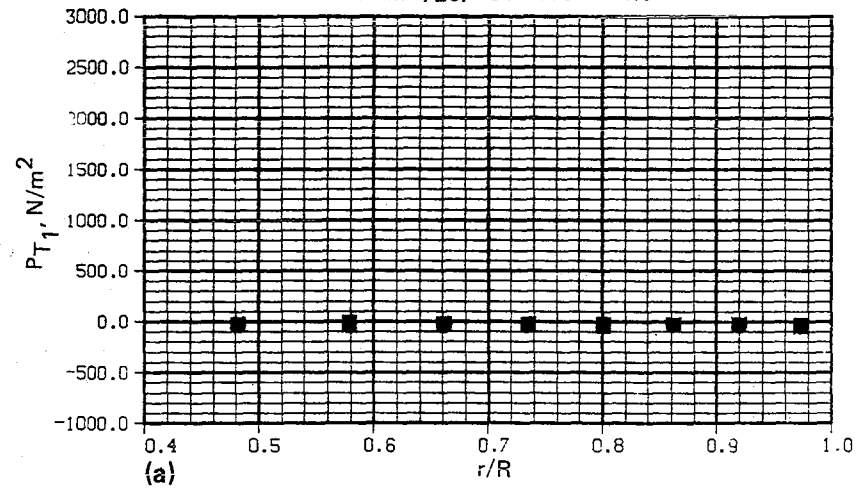
Figure D346.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

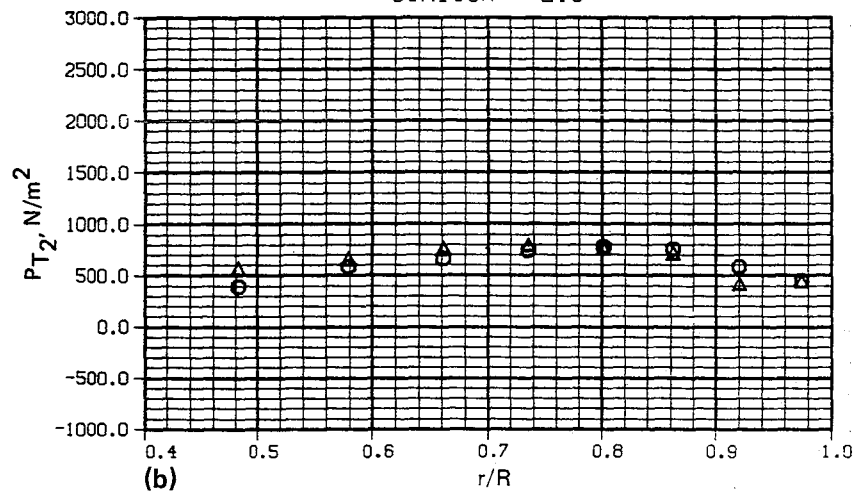
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 490. MASS FLOW: 38.96 slugs/sec

RPM: 720. STATION = 1.0



STATION = 2.0



STATION = 3.0

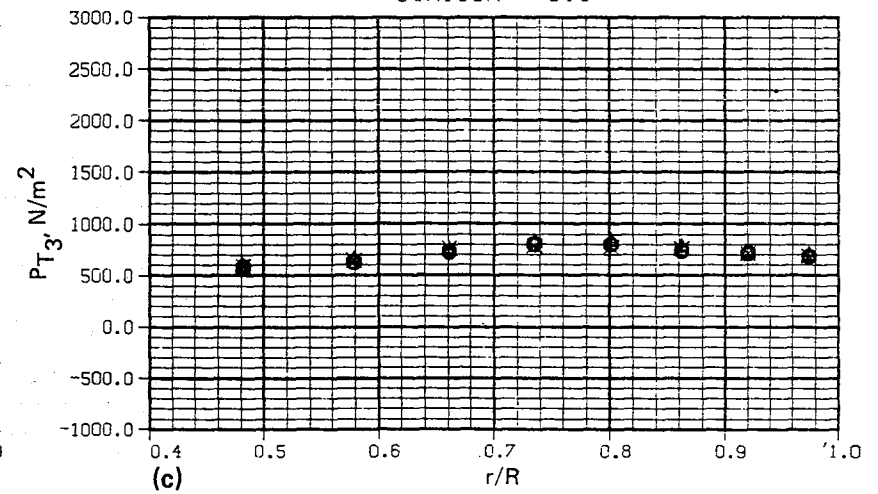


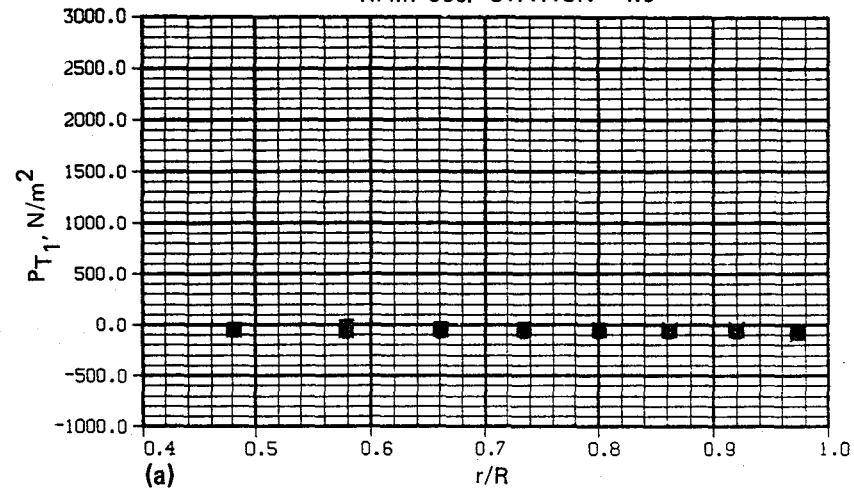
Figure D347.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

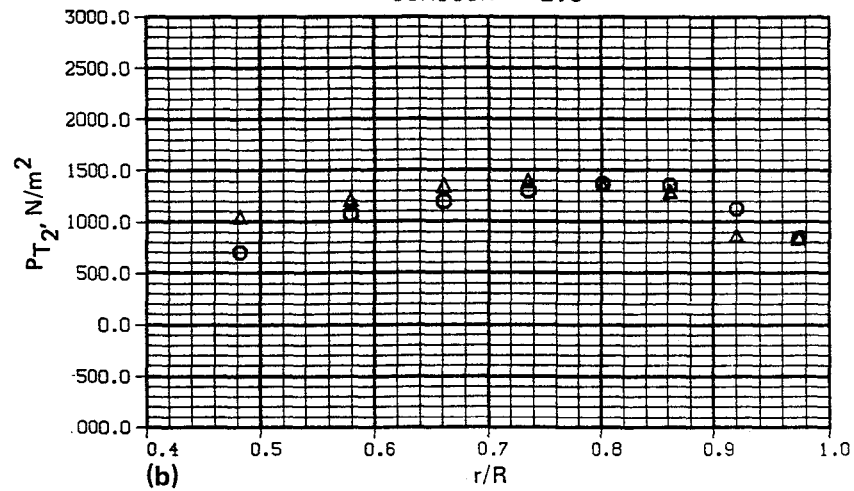
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 491. MASS FLOW: 53.23 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

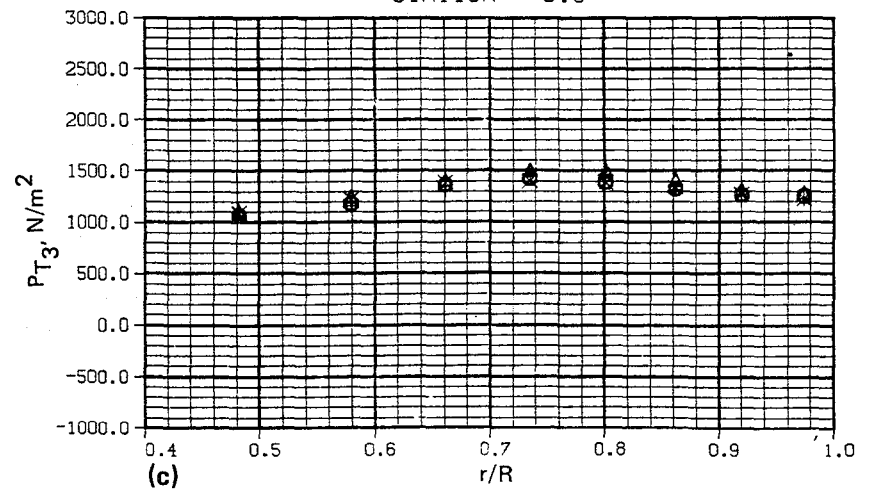


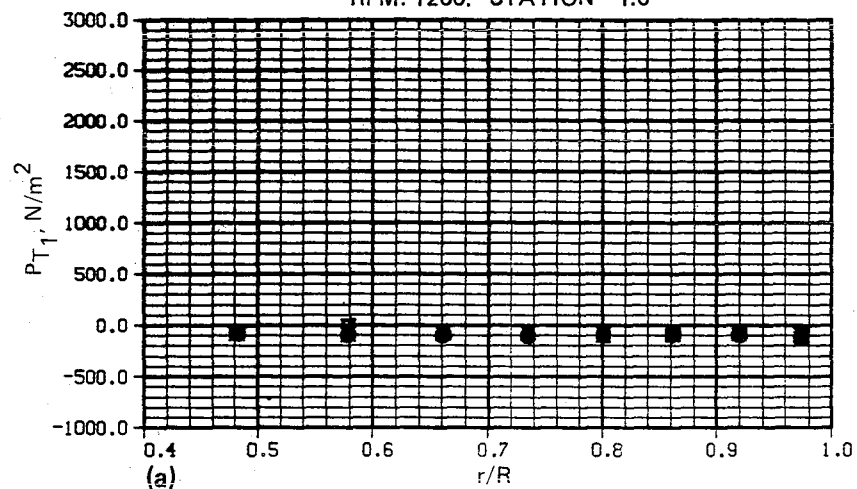
Figure D348.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

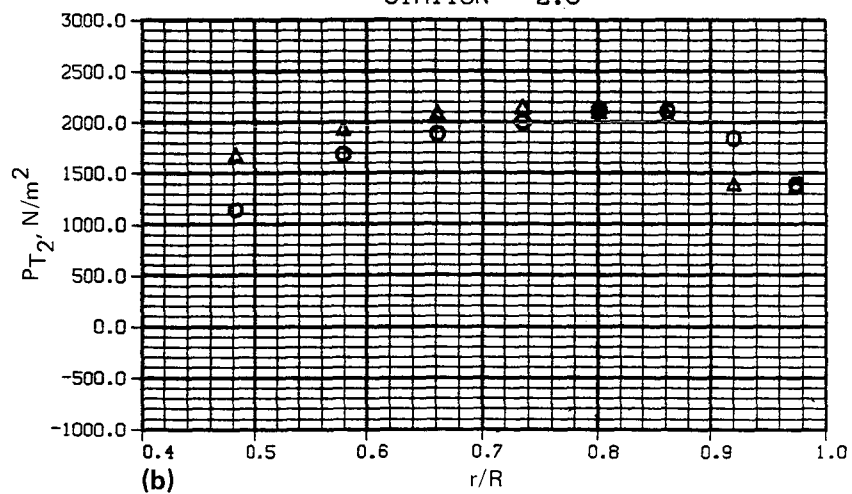
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 492. MASS FLOW: 68.04 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

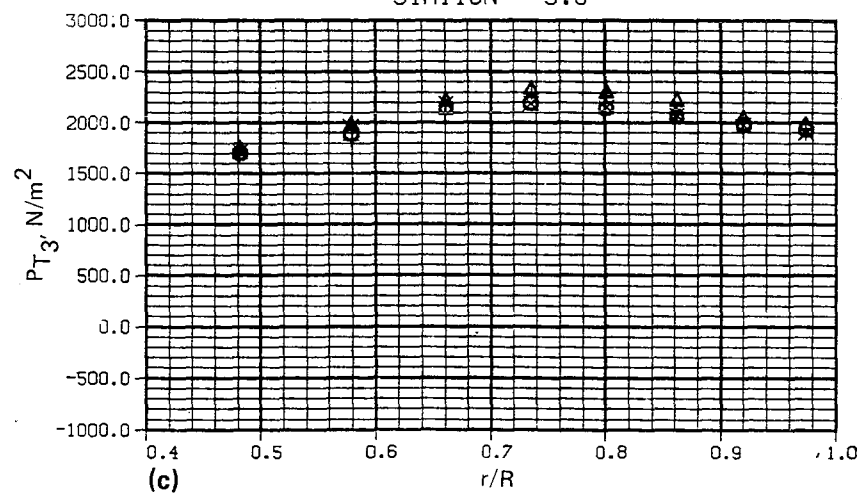


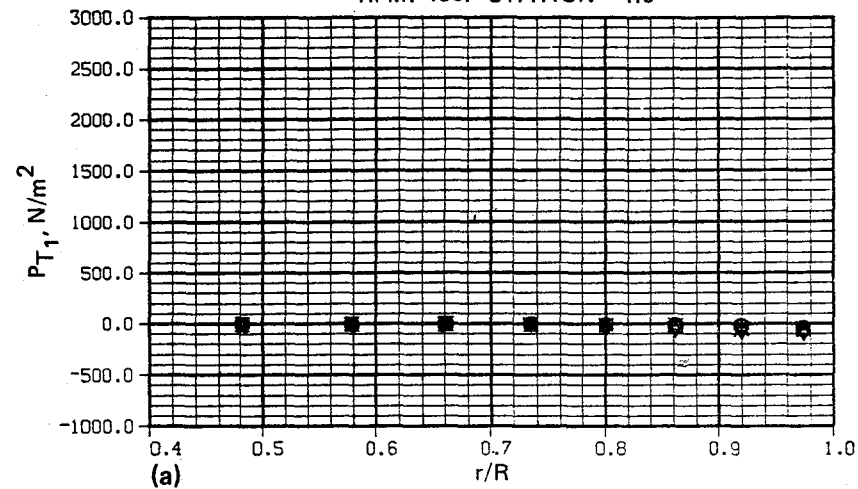
Figure D349.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

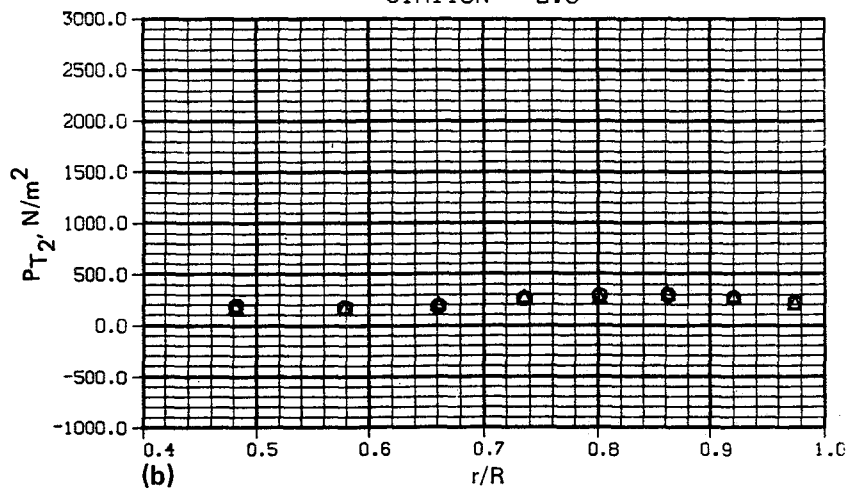
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 493. MASS FLOW: 10.24 slugs/sec

RPM: 480. STATION = 1.0



STATION - 2.0



STATION - 3.0

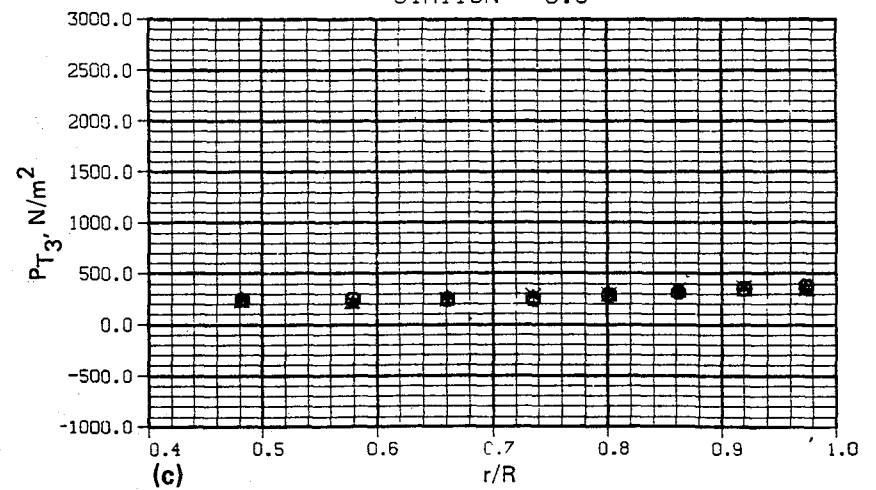


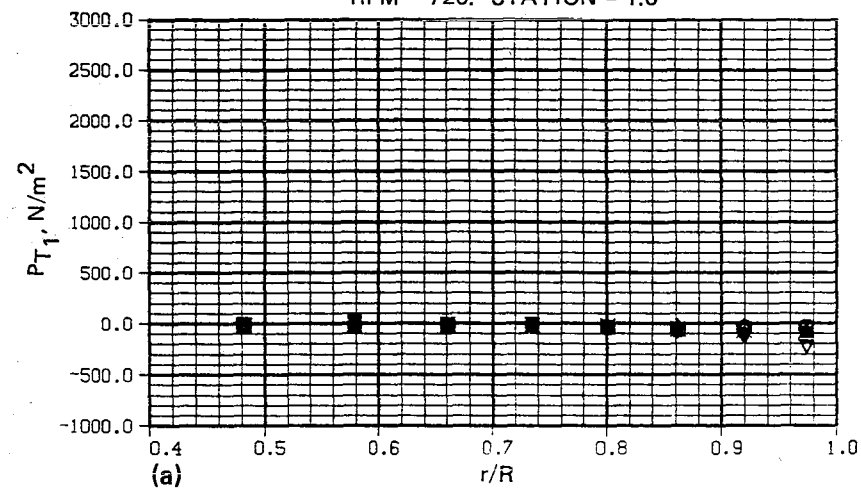
Figure D350.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

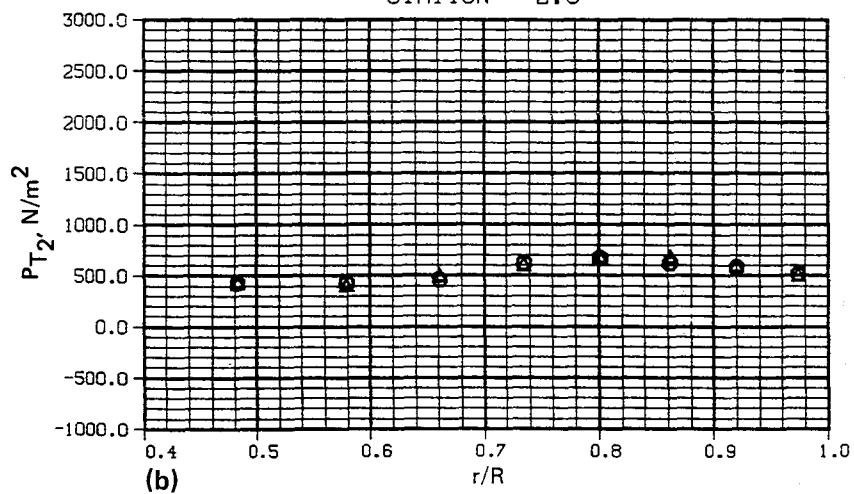
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 494. MASS FLOW: 15.64 slugs/sec

RPM = 720. STATION = 1.0



STATION - 2.0



STATION - 3.0

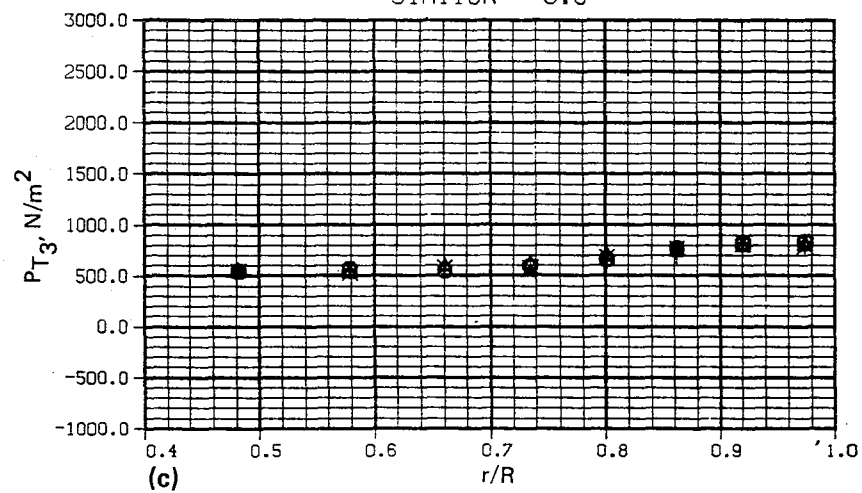


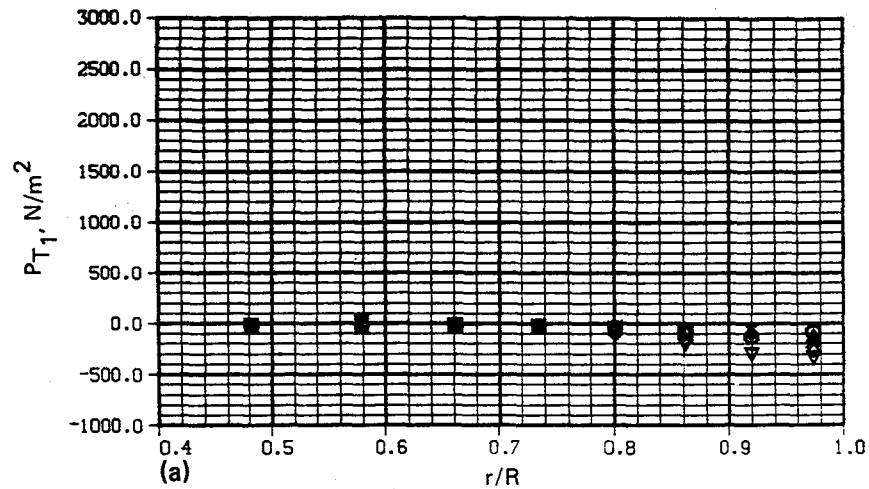
Figure D351.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

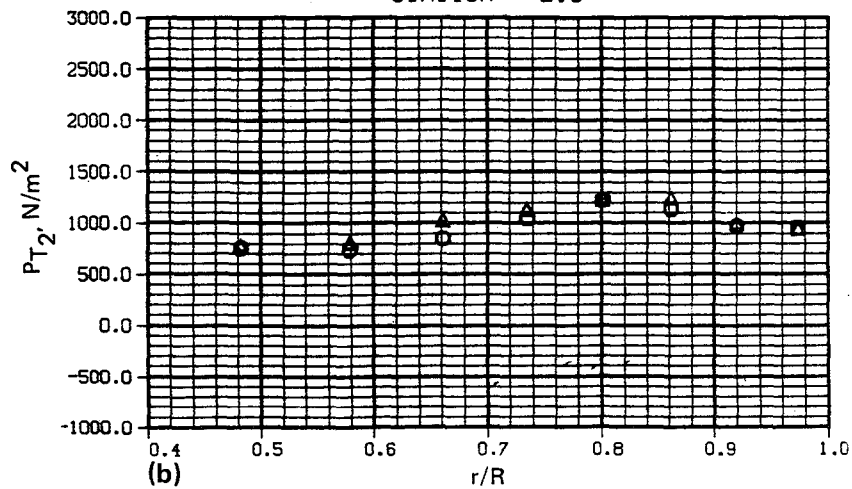
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 495. MASS FLOW: 19.90 slugs/sec

RPM: 960. STATION = 1.0



STATION - 2.0



STATION - 3.0

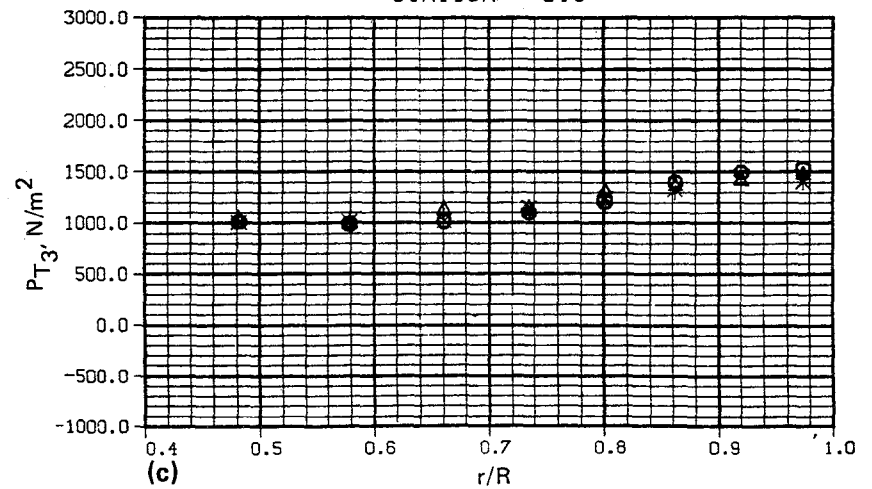
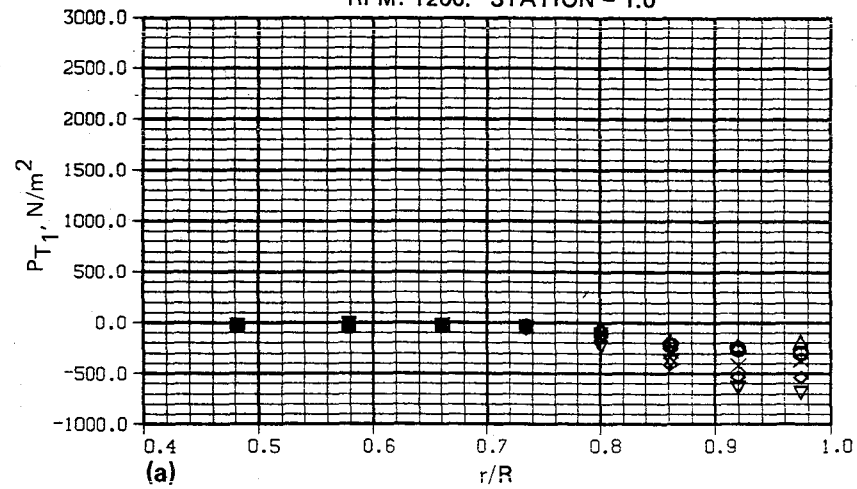
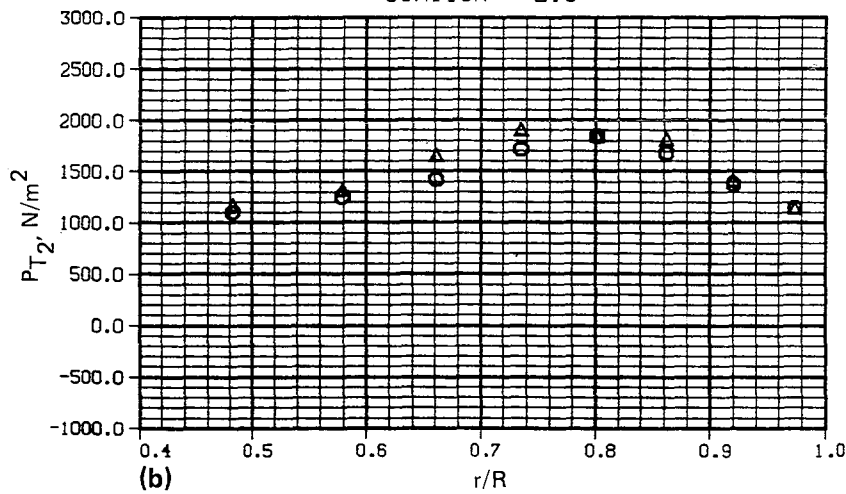


Figure D352.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE
 BLADE TYPE: 2. BLADE ANGLE: 24.5
 RUN NO: 496. MASS FLOW: 21.94 slugs/sec
 RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

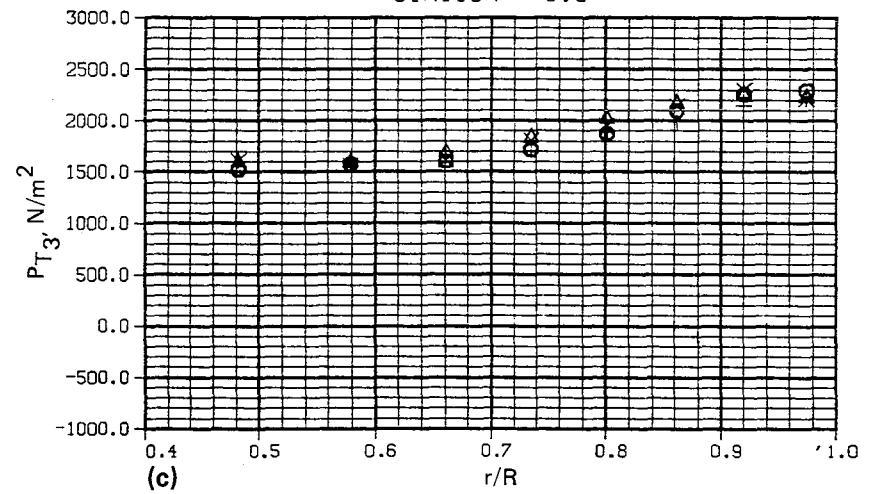


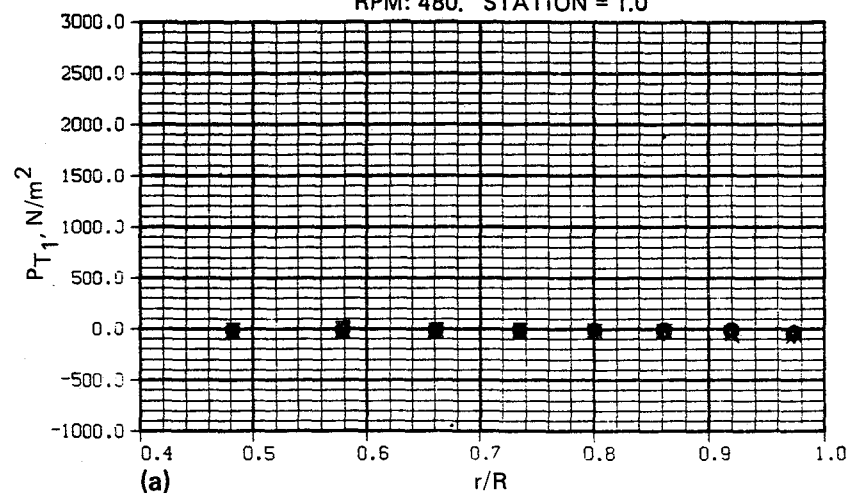
Figure D353.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

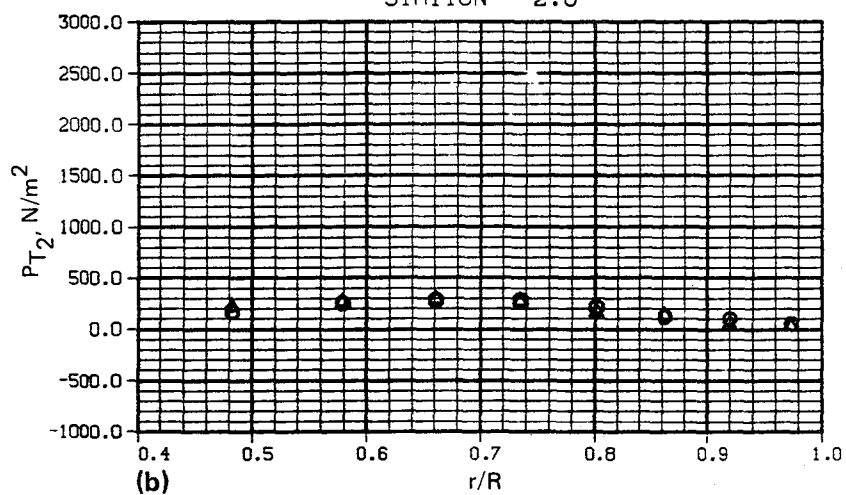
BLADE TYPE: 2, BLADE ANGLE: 24.5

RUN NO: 497 MASS FLOW: 14.17 slugs/sec

RPM: 480, STATION = 1.0



STATION - 2.0



STATION - 3.0

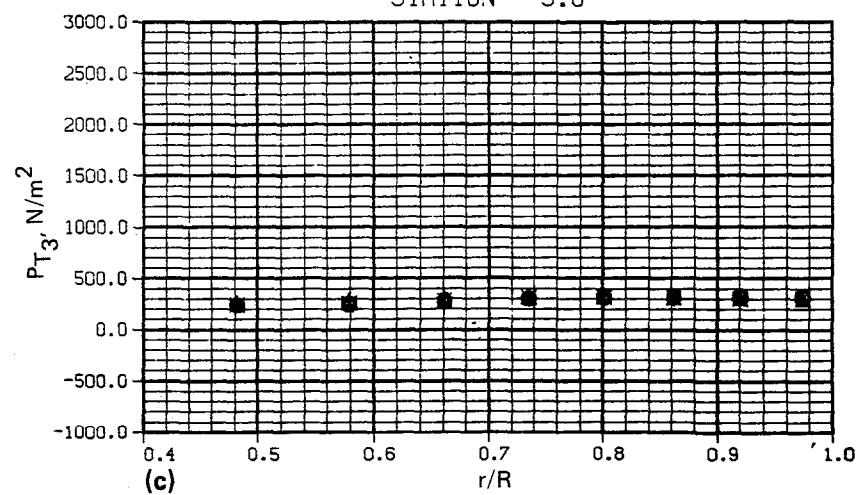


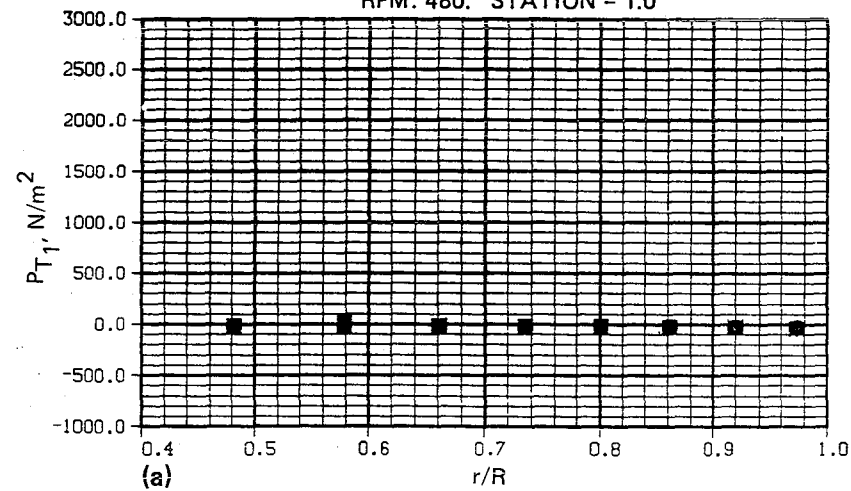
Figure D354.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

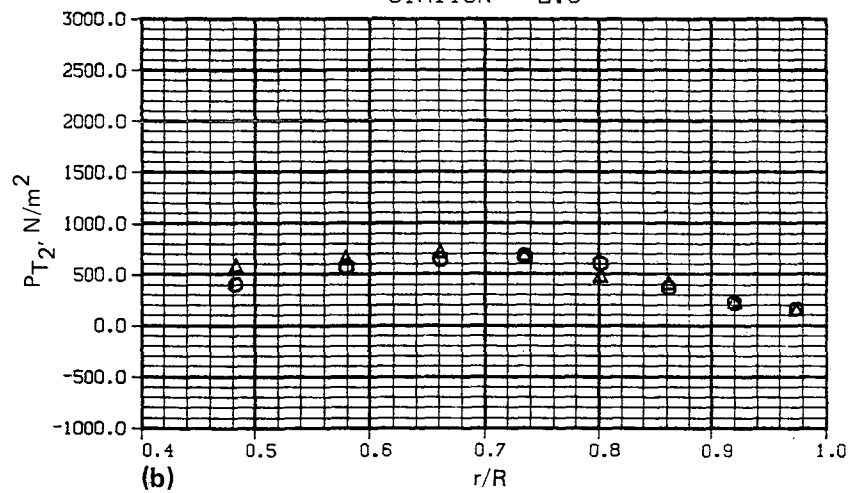
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 498. MASS FLOW: 25.79 slugs/sec

RPM: 480. STATION = 1.0



STATION = 2.0



STATION = 3.0

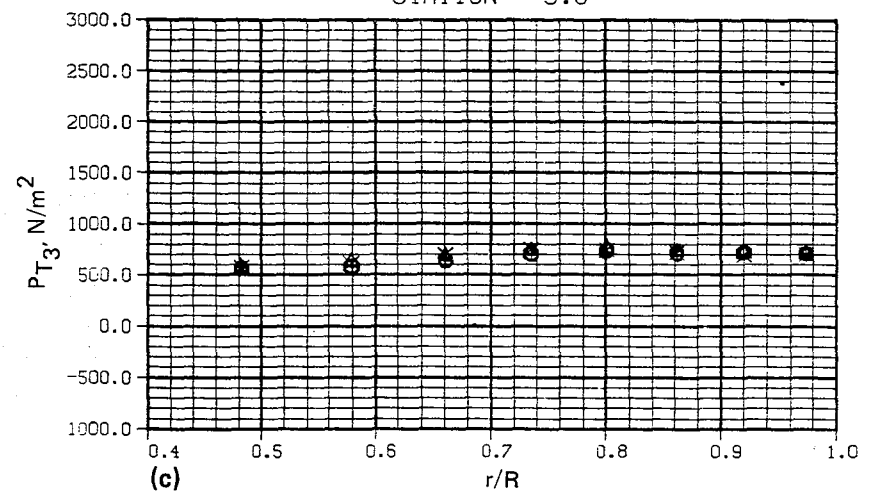


Figure D355.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 499. MASS FLOW: 36.81 slugs/sec

RPM: 960. STATION = 1.0

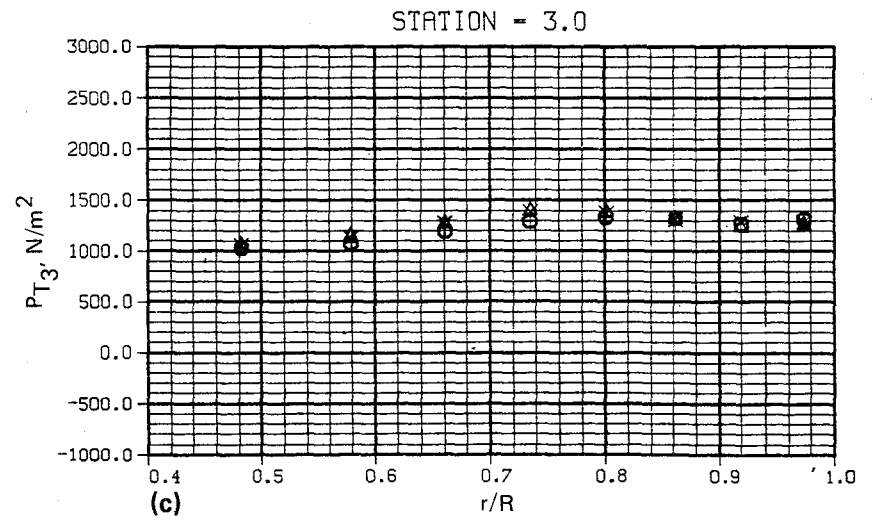
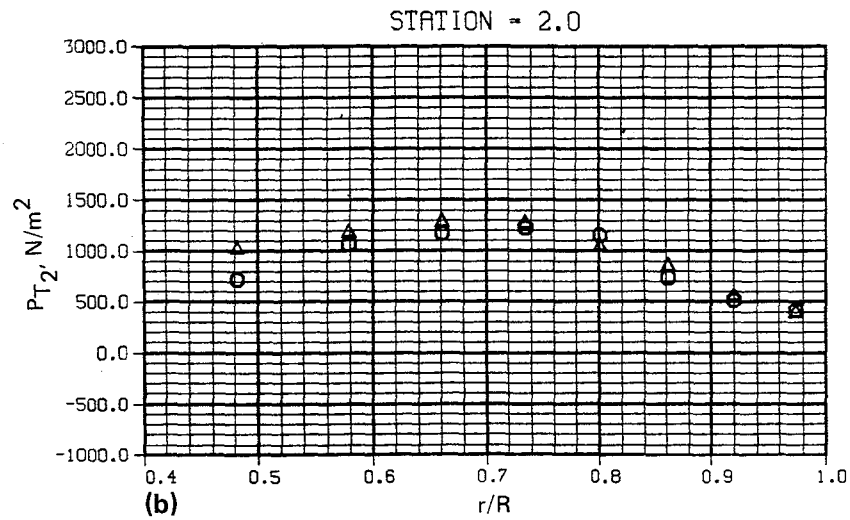
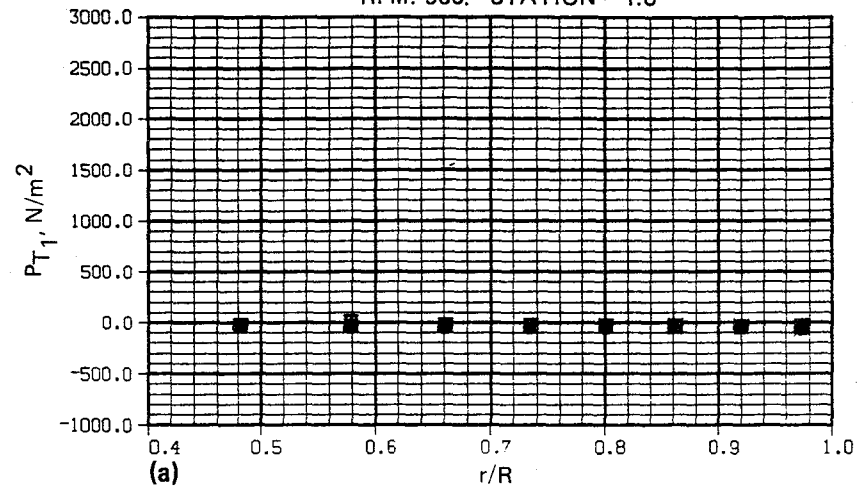


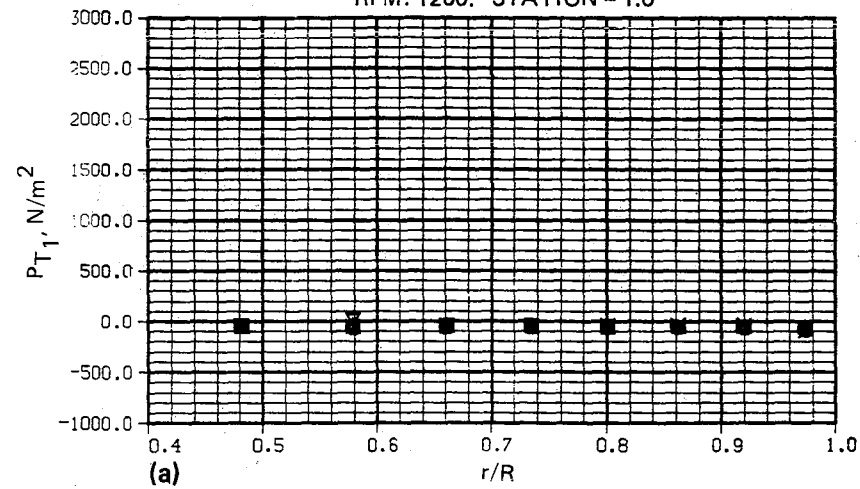
Figure D356.- Rake total pressures vs. radial distance.

RAKE TOTAL PRESSURES vs. RADIAL DISTANCE

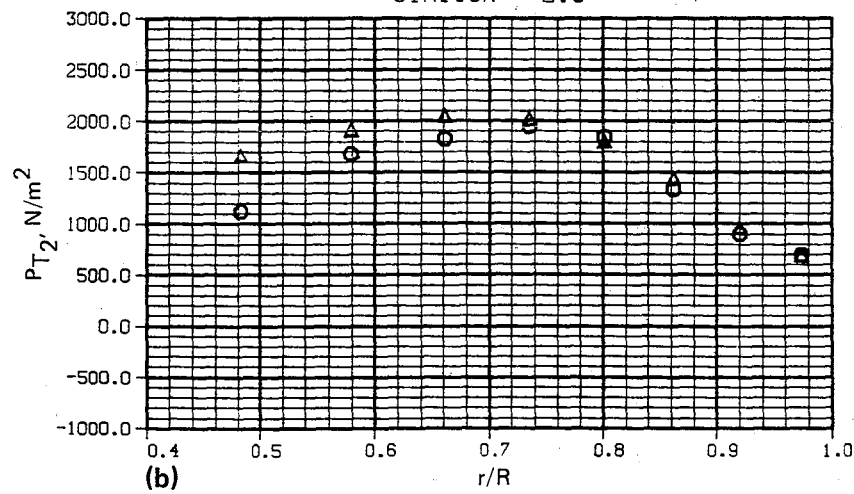
BLADE TYPE: 2. BLADE ANGLE: 24.5

RUN NO: 500. MASS FLOW: 47.99 slugs/sec

RPM: 1200. STATION = 1.0



STATION - 2.0



STATION - 3.0

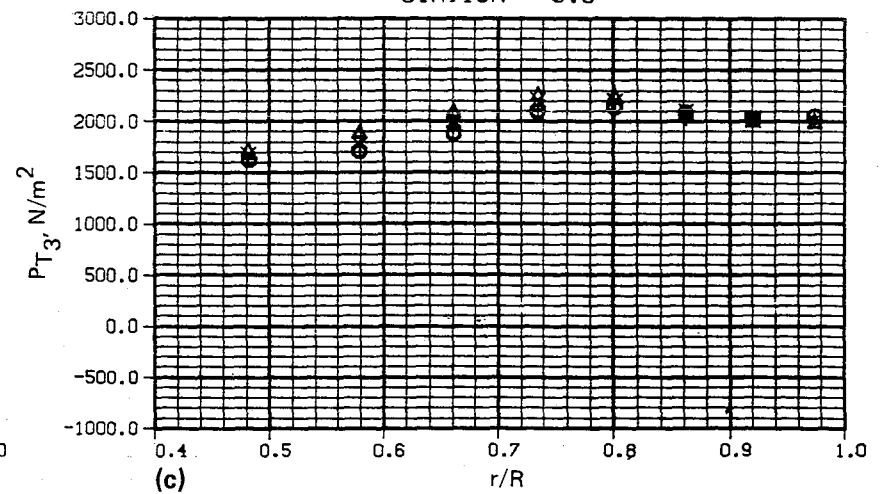



Figure D357.- Rake total pressures vs. radial distance.

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16. Abstract An experimental three-dimensional investigation of two fan-blade designs was conducted. The fan blades tested were 15%-scale models of blade designs to be used in the fan drive of the National Full-Scale Aerodynamic Complex at NASA Ames Research Center. NACA 65- and modified NACA 65-series airfoil sections comprised the two fan-blade designs. The blades with modified 65-series sections incorporated increased thickness on the upper surface, between the leading edge and the one-half-chord position. Twist and taper were the same for both blade designs. The fan blades with modified 65-series sections were found to have an increased stall margin when they were compared with the unmodified blades.			
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